

**Volume II**

**Appendices of Maps Photographs  
and Statistical Analysis  
to support the thesis**

**Effects of ecotourism on the  
proboscis monkey (*Nasalis larvatus*)  
in the Lower Kinabatangan, Sabah, Malaysia**



by  
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of the Australian National University in Biological Anthropology  
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Appendices of Maps, Photographs  
and Statistical Analysis  
to support the thesis

### Statement of originality

I, Heather Leasor, declare that the work presented in this thesis, submitted in fulfilment of the requirements for the award of Doctor of Philosophy, is to the best of my knowledge and belief, original and my own work, unless otherwise referenced or acknowledged. Material has not been submitted either in whole or in part, for a degree at this or any other university.

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# Appendix A Maps

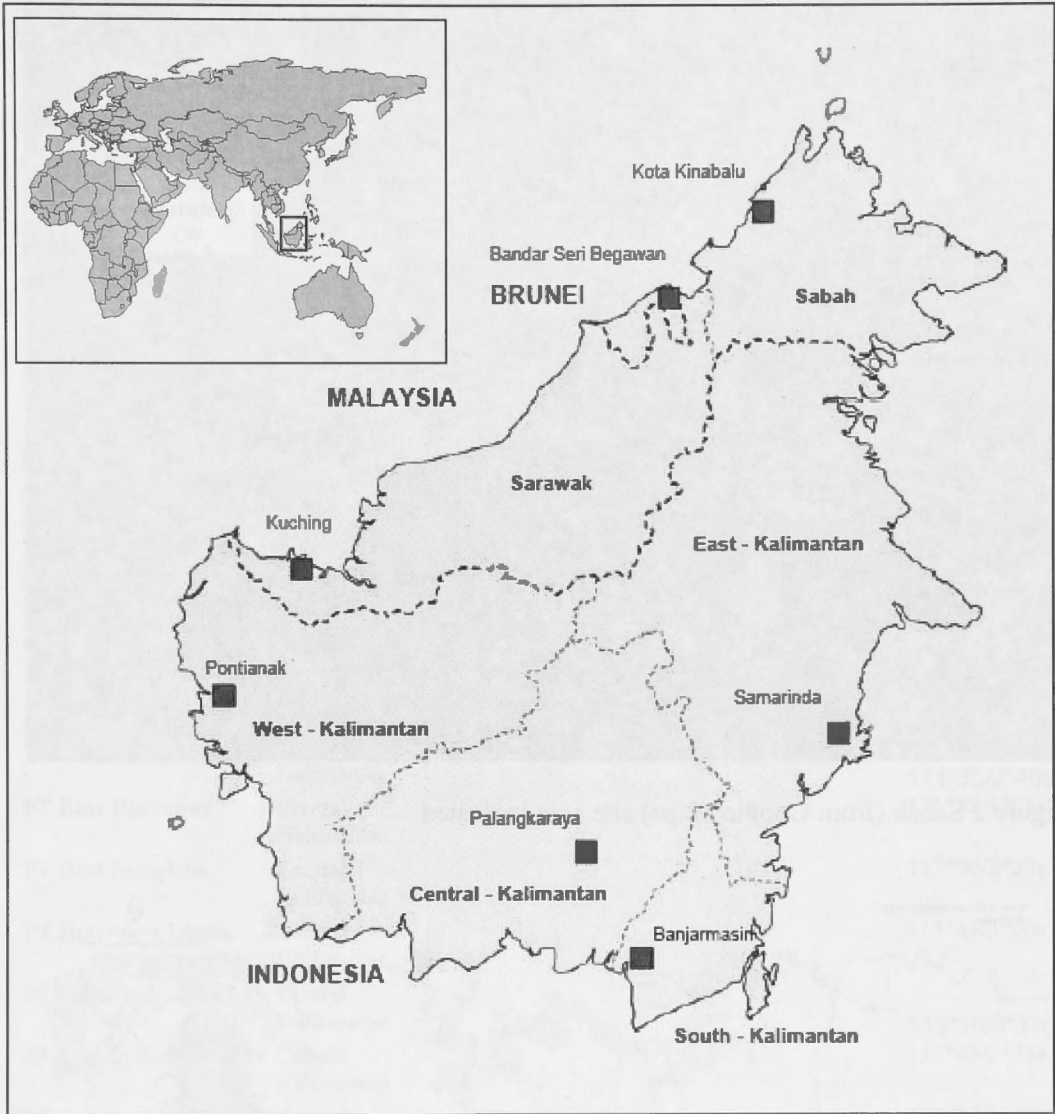


Figure 1 Borneo with placement map and governmental divisions from WWF Malaysia

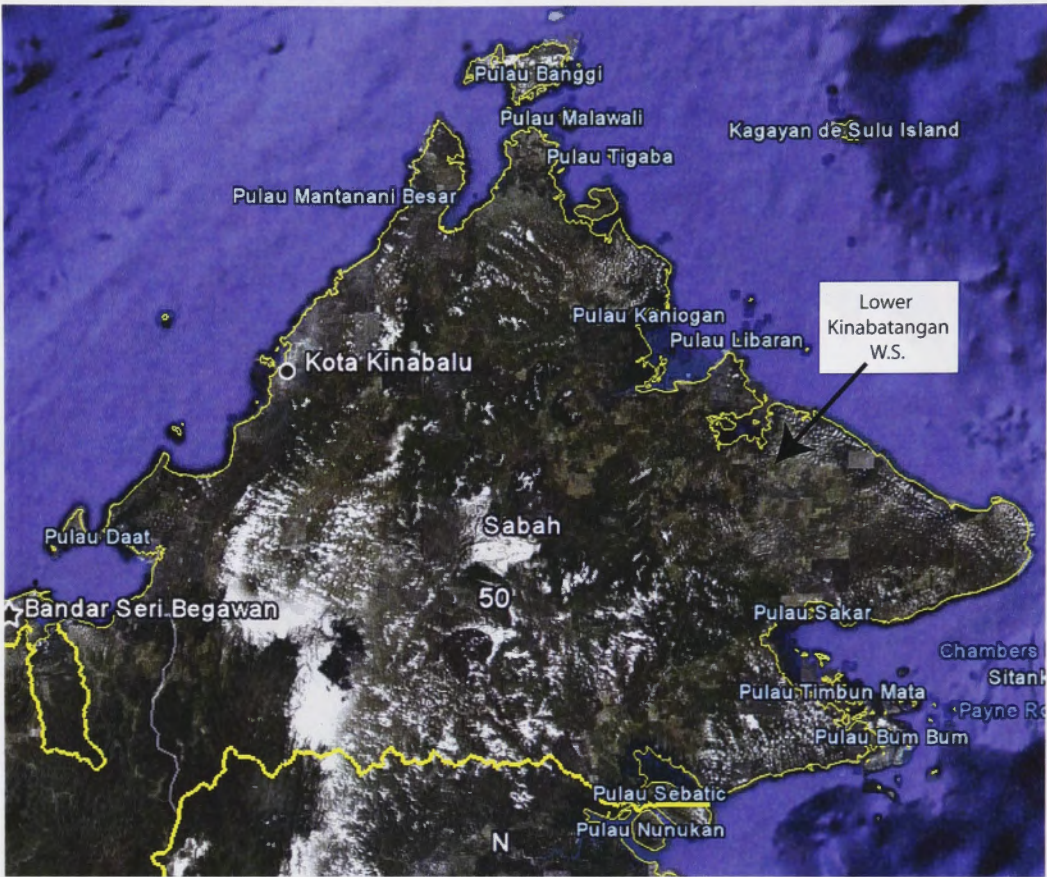


Figure 2 Sabah (from Google Maps) site area indicated

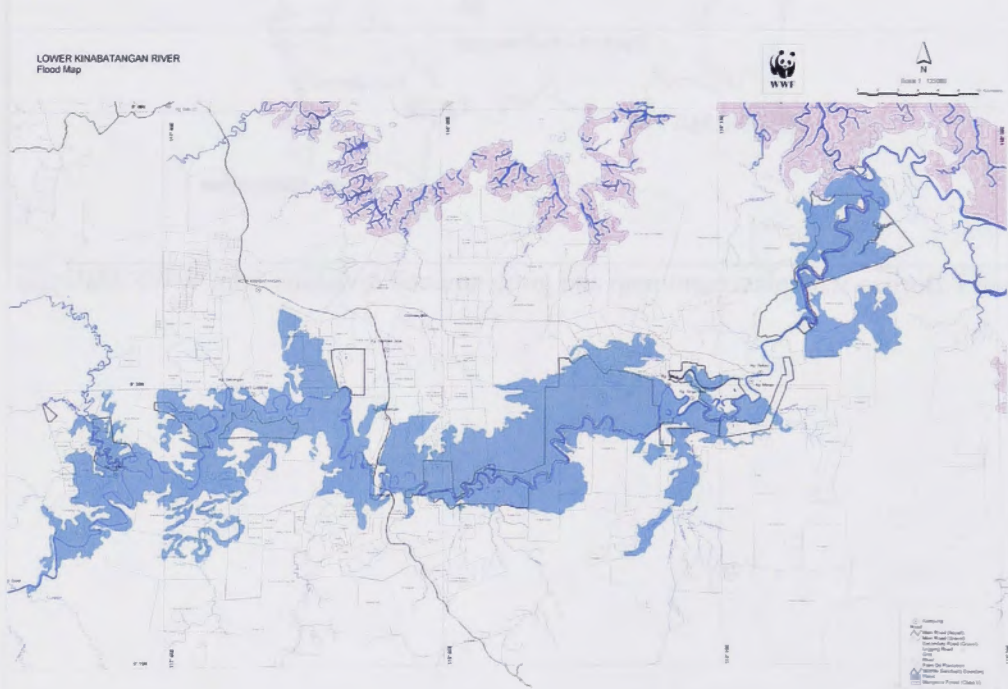


Figure 3 From WWF Malaysia map of proposed areas of the Lower Kinabatangan W S.

Table 1 List of known sites of proboscis monkeys, map and references in chapter three

Site name	location	Forest type	Population size	Protected area	Lat/Long
<b><u>Brunei Darussalam</u></b>					
Sungai Labu, Batang Trusan Primary Conservation Areas	Brunei				115*05/4*47n
Palau Siarau	Brunei				115*02/4*48n
Palau Berambang	Brunei				114*59/4*52n
S Brunei / Limbang	Brunei				115*00/4*58n 115*10/4*57n
Brunei Bay (Islands Baru Baru, Berambang, Pepatan, Berbunut, Kaingaran, and Rangu) (Rivers Dolhakim, Brunei, Manunggal, Lumapas, Aloh Besar, Damuan, Ayam Aam and Bangau)	Brunei	Mangrove and nipah palm	<600 (1995)	N	
<b><u>Indonesia</u></b>					
Pt Bintang Arut	Central Kalimantan			n	111*35/2*40s
PT Erna Djulawati	Central Kalimantan			n	111*52/1*08s
PT Bina Samaktha	Central Kalimantan			n	112*00/2*25s
PT Brata Jaya Utama	Central Kalimantan			n	113*45/3*00s
PT Carus Indonesia	Central Kalimantan			n	113*10/0*37s
PT Gadjah Seno Sakti	Central Kalimantan			n	112*45/2*45s
PT Gunung Meranti	Central Kalimantan			n	114*00/0*30s
PT Hutan Mulya	Central Kalimantan			n	112*50/1*20s
PT Rathitara	Central Kalimantan			n	113*30/1*30s
PT Sehati Barito, S Bila	Central Kalimantan			n	111*15/2*35s
PT Yusmin Trading	Central Kalimantan			n	112*45/2*00s
S. Gula	Central Kalimantan				114*11/0*44s
S Hanyu	Central Kalimantan				114*02/0*58s
S Kapuas Murung	Central Kalimantan				114*25/2*25s
S. Mandau	Central Kalimantan				113*53/0*43s

Site name	location	Forest type	Population size	Protected area	Lat/Long
S. Mengkutup	Central Kalimantan				114*15/2*05s
S. Murung PT LAAS	Central Kalimantan			n	114*24/0*09s
S. Pinang	Central Kalimantan				114*04/0*51s
Tumbang Muhub	Central Kalimantan				112*21/1*02s
Tanjung Penghujan	Central Kalimantan				111*32/2*59s
Tanjung Puting extension	Central Kalimantan				111*50/3*11s
Camp Leaky	Central Kalimantan		33.0ind/km2 (1980-81)		
Natai Lengkuas (Tanjung Puting National Park) Sekonyer River	Central Kalimantan	Fresh water peat swamp lightly logged lowland dipterocarp	57.2ind/km2 (1995) +1000	Y 3,7000km2	111*56/2*53s
Sungai Dason	East/Central Kalimantan				114*58/0*07n
Barito Ulu (Murung River Upper Barito river)	Central Kalimantan	Rugged terrain, rapids in river			
Barito River	Central Kalimantan	Riverine	100-1000	n	114*33/3*14s
Katingan river	Kalimantan				
Rungan river	Central Kalimantan				
Kahayan river	Central Kalimantan				114*17/3*13s
Balikpapan Bay	East Kalimantan	Riverine, mangrove, freshwater swamp		n	116*43/1*03s
Balikpapan Bay north	East Kalimantan		100		116*42/0*55s
D Kendang Murung	East Kalimantan				116*35/0*23s
Danau Wis	East Kalimantan				116*11/0*30s
Lamin Pulut	East Kalimantan				116*16/0*01s
Bunua Puhun, S. Mahakam	East Kalimantan				116*49/0*16s
Danau Melitang	East Kalimantan				116*18/0*22s
Danau Semayang	East Kalimantan				116*25/0*20s

Site name	location	Forest type	Population size	Protected area	Lat/Long
Danau Jempang	East Kalimantan				116*10/0*34s
Mahakam River	East Kalimantan	Riverine and swamp		N	116*47/0*13s
Lower Mahakam delta	East Kalimantan				117*21/0*48s
Mahakam delta	East Kalimantan	Mangrove and nipah palm	100-1000	n	117*27/0*40s
Sungai Mahakam Long Bagun	East Kalimantan	Riverine, freshwater and peat swamp	100-1000	n	115*04/0*18N
Teratak S Mahakam	East Kalimantan				116*45/0*13s
Miau Baru	East Kalimantan				116*57/1*15n
Muara Kayan	East Kalimantan				117*32/2*59n
Muara Sebuku	East Kalimantan				117*28/4*10n
PT Adindo Hutani Lestari	East Kalimantan			n	116*45/3*50n
PT Alas Helau	East Kalimantan			n	116*45/1*50n
PT Daisy Timber	East Kalimantan			n	118*40/1*15n
PT Dana Mula Bhakti	East Kalimantan			n	117*25/3*47n
PT ITCI-Weyerhaeuser	East Kalimantan			n	116*43/0*53S
PT Jaya Maha Kerta	East Kalimantan			n	117*10/4*05n
PT Rejosari Bumi	East Kalimantan			n	117*45/2*10n
PT Surya Hutani Jaya	East Kalimantan			n	117*08/0*05n
PT Timberdana	East Kalimantan			n	115*35/0*20s
PT Tunggal Yudi Sawmill Plywood Salim Batu	East Kalimantan			n	115*35/0*30n
Sungai Alango Ulu	East Kalimantan				117*20/3*00n 115*56/2*52n
Sungai Baai	East Kalimantan				117*38/1*15n
Sungai Bahau Long Alango	East Kalimantan				115*5/2*52n
Sungai Bahau Long Peleran	East Kalimantan				115*50/2*47N
S Bulungan	East Kalimantan				117*30/2*55n



Site name	location	Forest type	Population size	Protected area	Lat/Long
Sungai Jelau	East Kalimantan				115*52/0*26s
S. Kahala	East Kalimantan				116*21/0*05s
Sungai Karangan	East Kalimantan				117*51/1*14n
S Kayan	East Kalimantan	Riverine, freshwater swamp, mangrove and nipah palm	100	n	116*43/2*48n
S Kedang Kepala	East Kalimantan	Riverine, freshwater and peat swamp	100	n	116*41/0*04n
S Kedang Rantau	East Kalimantan				116*45/0*01n
Sungai Kedang	East Kalimantan				116*37/0*25s
S Kelai Long Lanuk	East Kalimantan				117*17/2*00n
S Kendang Pahu	East Kalimantan				115*58/0*21s
Sungai Lurah	East Kalimantan				115*41/2*41N
S Pangean	East Kalimantan				116*44/2*38n
Sungai Ratah	East Kalimantan				115*12/0*14n
Sungai Samboja	East Kalimantan				116*59/1*11s
Sungai Wain	East Kalimantan	Water hole, river, swamp		Y (reintroduced to protected area)	116*47/1*05s
S Sebukuh	East Kalimantan	Riverine, mangrove, nipah palm and freshwater swamp		n	117*25/4*05n
S Sebukuh Island	East Kalimantan			n	117*05/3*57n
S Sembakung	East Kalimantan	Riverine, mangrove, nipah palm and freshwater swamp		n	117*20/3*48n
Sungai Sengatta, Kutai NP	East Kalimantan			y	117*26/0*26n
upper Sungai Senggata	East Kalimantan				117*12/0*36n

Site name	location	Forest type	Population size	Protected area	Lat/Long
Kutai National Park	East Kalimantan	Mangrove, riverine, freshwater and peat swamp, lowland dipterocarp	223act ind - 400 estimate .8ind/km2	Y (1980km2 est 1930 but 1960, 1970 part degazetted)	117*22/0*20
S Sesayap	East Kalimantan	Riverine, mangrove, nipah palm, and freshwater swamp		n	116*58/3*37n
Sungai Tubu	East Kalimantan				116*07/3*09n
Sungai Wahau	East Kalimantan				116*52/1*07n
Sangkulirang	East Kalimantan	Riverine, freshwater swamp, mangrove and nipah palm		n	118*31/1*00n
Sengatta Estuary	East Kalimantan		100		117*35/0*27n
Tarakan	East Kalimantan				117*37/3*22n
Teluk Apar/Teluk Adang	East Kalimantan				116*34/2*13s
Teluk Kaba	East Kalimantan				117*29/0*14n
Tubuan	East Kalimantan				116*18/0*11s
West of Muara Kaman NR	East Kalimantan				116*39/0*13n
Muara Inda Muara Kaman	East Kalimantan	Riverine	125	N	116*42/0*09n
Muara Muntai	East Kalimantan	Riverine	60	N	116*23/0*21n
Pegadan (Baai River)	East Kalimantan	Mixed dipterocarps on limestone	20.2 ind/km2	(4 km2)	117*52/1*12n
Bukit Soeharto protection forest	East Kalimantan	Riverine mangrove	Troup every 2-8km	5000ha	115-116*36-54/0-1*50-01s
Jaro	Kalimantan	Rubber			
Muara Uya	Kalimantan	Rubber			
Upau	Kalimantan	Rubber			
Haruai	Kalimantan	Rubber			
Murung Puduk	Kalimantan	Rubber			
S. Buluh Besar			25.0 indkm2 (1989)		
Moera Tehweh			5.0 ind/km2 (1993)		

Site name	location	Forest type	Population size	Protected area	Lat/Long
C A Teluk-Kelumpang, Selat-Laut Selat Sebuk				66.65ha	
Tanjung Pedadatua, Kuala Lupak	South Kalimantan				
Tatah Paandangan (Kacamatan Tabunganen) (Barito Kuala)	South Kalimantan	Mangrove	40		
Desa Tanggul Rejo and Desa Beringin Kencana (Barito Kuala)	South Kalimantan	Galam forest	13		
Desa Koanda (Barito Kuala)	South Kalimantan	Galam forest	40		
Pulau Bakut (Barito Kuala)	South Kalimantan	Riverine	11		
Desa Barambai Kolam Kiri and Desa Antar Jaya (Barito Kuala)	South Kalimantan	Galam forest	50		
Desa Belawang (Barito Kuala)	South Kalimantan	Village garden plot	10		
Rakyat Desa Bambang (Barito Kuala)	South Kalimantan	Riverine and rattan production forest	15		
Sungai Tabatan (Barito Kuala)	South Kalimantan	Galam and riverine forest	25		
Sungai Tabatan and Desa Jamba (Barito Kuala)	South Kalimantan	Riverine and rattan production forest	25		
Banjarmasin	South Kalimantan				
Palau Kaget Reserve Palau Tempurung Besar and Tempurung Kecil, Palau Bakut (Barito Kuala)	South Kalimantan	Forest fragment, river edge and island, mangrove, rice field	51 1993 (extinct 1999) (Previously 300)23 now EXTINCT	Y (.85km2 in 1985)	114*32/3*21s 114*30/3*24s
Hutan Bakau Pantai Timur	South Kalimantan				116*02/3*16s
Muara Muning	South Kalimantan				114*50/2*50s
Pulau Kembang Taman Wisata Alam Pulau Kembang (Barito Kuala)	South Kalimantan	Riverine			114*32/3*17s
Pulau Laut	South Kalimantan	Riverine, lowland dipterocarp, freshwater swamp	?	8 n	116*13/3*48s

Site name	location	Forest type	Population size	Protected area	Lat/Long
Pulau Pinang	South Kalimantan				115*03/3*05s
Pleihari Martapura	South Kalimantan				114*56/3*56s
Pleihari Tanah Laut Wildlife Reserve	South Kalimantan			6	114*41/4*08s
Sungai Kacang	South Kalimantan				115*10/2*40s
Sungai Negara	South Kalimantan				114*56/2*47s
Tahura Sultan Adam	South Kalimantan	112ha			114*5/3*2s
Sungai Tapin	South Kalimantan				115*15/2*55s
Lower Sungai Barito	South Kalimantan				114*26/3*28s
Marabahan sub-district	South Kalimantan				115*0/3*0s
Bukit Raya	West (& Central) Kalimantan			y	112*42/0*54s
Benau Martinus	West Kalimantan				112* 25/1* 07N
Danau Sentarum National Park/ Wildlife Reserve (S Embaluh Leboyan, S Belitung, S Punggau, S Sumpa, S Tawang, Kpg Nanga Pengail, S Kenelang, S Seriyang, S Buloh, S Menyatai, S Batang Ketam, S Seputung)	West Kalimantan	Dwarf swamp forest, stunted swamp forest, tall swamp forest, riverine forest	609 ind in 57 groups 1.47 ind/km2 71 in 15 groups in dry season) 5 grp 52 outside	Y 829km2 (80000-130000ha)	112*03/0* 47N
Sungai Batang Ketam DSNP/WR	West Kalimantan			y	112*7/0*50n
Sungai Belitung-Sungai Punggau DSNP/WR	West Kalimantan			y	112*15/0*45n
Sungai Embaluh Leboyan DSNP/WR	West Kalimantan			y	112*17/0*51n
Sungai Septung Forest DSNP/WR	West Kalimantan			y	112*13/0*54n
Sungai Tawang DSNP/WR	West Kalimantan			y	112*1/0*46n
Hutan Sambas (NR) Paloh	West Kalimantan	Nipah palm, mangrove, lowland dipterocarp, peat swamp	100-1000	N	109*26/1*43N
Gunung Senuju (G Senjujuh)	West Kalimantan				109*29/1*30N

Site name	location	Forest type	Population size	Protected area	Lat/Long
Gunung Palung National Park	West Kalimantan	Fresh water swamp, peat swamp, riverine, lowland dipterocarp	100-1000	Y	110*05/1*06S
Kampung Baru, Gunung Palung NR	West Kalimantan				110*10/1*6s
Sungai Matan, Gunung Palung NR	West Kalimantan				110*5/1*3s
Sungai Bangkul Besar	West Kalimantan				110*25/2*45s
Sungai Blamban	West Kalimantan				110*14/2*43s
PT Jamaker KalBar Bl. Nanga Sei	West Kalimantan			n	111*00/1*00n
PT Jamaker KalBar Blok S. Haji	West Kalimantan			n	109*30/1*40n
PT Jamaker KalBar Blok Unit 1	West Kalimantan			n	109*30/1*50n
PT Jamaker KalBar Jaya Bl. Lanjak	West Kalimantan			n	112*25/1*00n
PT Jamaker KalBar S. Sentimau	West Kalimantan			n	109*36/1*25n
PT Duadja Corporation II	West Kalimantan			n	110*49/0*50s
PT Sinar West Kalimantan Timber	West Kalimantan			n	110*42/2*37s
PT Sumber Jaya Baru Utama	West Kalimantan			n	110*30/1*05s
Kendawangan Nature Reserve	West Kalimantan	Freshwater and peat swamp	100-1000	y/n (650km2 gazetted 1981 but no longer on maps)	110*27/2*28S 112*23/1*07n
S. Embaloh	West Kalimantan				112*32/1*23n
Sungai. Embaloh Ulu	West Kalimantan				110*18/2*32s
Sungai Membuluh	West Kalimantan				110*41/2*47s
Sungai Mentangan	West Kalimantan				111*56/0*56n
S. Tang	West Kalimantan				112*29/0*39n
Danau Tang	West Kalimantan				112*15/0*39n
Tanjung Satay	West Kalimantan				109*34/1*12s
upper Sungai Kapuas	West Kalimantan				112*54/0*56n
Kelompok G. Asuansang	West Kalimantan				109*35/1*43n

Site name	location	Forest type	Population size	Protected area	Lat/Long
C A Gunung Kentawan (Kendawangan)	West Kalimantan	257.9ha			110*11/2*29s
<b>Malaysia</b>					
Sebatik Island	Sabah				117*55/4*25n
Berhala Island	Sabah				117*76/5*02n
Tempasuk Plain (Rampayan River)	Sabah				116*25/6*28n
Tempasuk Plain (Rampayan River)	Sabah				116*27/6*25n
Pulau Gaya, rampayan	Sabah				116*2/6*1n
Rampayan River within Tempasuk Plain	Sabah		?	?	116*27/6*25N to 116*29/6*28N
Nabahan Forest Reserve	Sabah	Mangrove, nipah palm		y 500ha	115*29/4*99n
Kg. Hindian Forest Reserve (S Lingkungan, S Inuman)	Sabah	Mangrove, nipah palm		y 580ha	115*29-27/4*99-5*n
Serinsim Marak Parak in Kota Marudu Kinabalu Park	Sabah				116*28/6*34n
Serinsim	Sabah				116*43/6*19n
Kawang river Papar	Sabah		possibly EXTINCT		115*02/5*24n
Klias Peninsula	Sabah	Mangrove, nipah, wet grassland, riverine and swamp	1.14 in/km2 126ind 34grp/401ind	N (3136km2)	115*30/5*20n (115*20-40/5*10-30n) 115*28/5*1
Sungai Menggalong (Mangalong)	Sabah	Mangrove nipah	3grp		
Klias Forest Reserve (S. Nabahan, S Padas, S Api-Api, and S Bukau boundry)	Sabah	Peat swamp	10grps 52 total 6grps S Padas Bukau 31ind 5 grp , Meraba, Inuman 7 2 grp, Lingkungan 14 3 grp , Nabahan 2 groups none on api-api	y (3630ha)	5*12-30N 115*22-42E
Padas Bay (same as S Bukau, Meraba, Lingkungan, Nabahan)	Sabah				115*30/5*10n
Binsulok	Sabah		1gp/km	partially	115*41/5*31n
Menumbok	Sabah	Mangrove nipah	6gr	partially	

Site name	location	Forest type	Population size	Protected area	Lat/Long
Beaufort	Sabah				115*46/4*92n
Garama, Klias/ kota klias	Sabah	Mangrove, nipah, riverine swampy grassland	4grp	partially	115*31/5*23n
Padas Bay	Sabah				115*34/5*12n
Padas Bay to Lubuk, Weston	Sabah				115*35/5*10n
Weston Klias	Sabah		12grp		115*35/5*13n
Cowle delta	Sabah			n	117*55/4*25n
Eastern Deltas	Sabah				118*50/5*27n
Labuk Bay Proboscis Monkey Sanctuary	Sabah	Mangrove	89indiv in 5 social groups (2005)	privately owned 162ha	117*47/5*55n
Samporna lowlands	Sabah				118*26/4*28n
Kinabatangan River	Sabah		20.46 in/km??	Partially 26,000	118*20/5*30n
Kabili-Sepilok Forest Reserve	Sabah			Y	117*59/5*49n
Segama River	Sabah	Mangrove riverine nipah	0.57grp/km	N	118*23/5*14n
Sungut delta	Sabah				117*43/6*25n
Sugut River middle reaches	Sabah		?	N	117*29/6*17n
Sugut River	Sabah	Mangrove nipah riverine	0.61grp/km	N	117*43/6*25N
Paithan (Paitan)/Tangkarason	Sabah	Mangrove nipah	8gp/km	class V (no)	117*30/6*31n
Sungai Tangkarason	Sabah				117*22/6*34
Paitan					
Maliau Basin	Sabah		???	Partially	116*50/4*45n
Conservation Area					
Dewhurst Bay area	Sabah				118*35/5*34N
Danum Vally	Sabah		????	Y	
Conservation Area					
Gunung Lutong	Sabah			Partially	117*47/5*02n
Conservation Area					116*53/4*56
Beluran	Sabah	Mangrove nipah, riverine, freshwater and peat swamp	0.31grp/km	no	
					117*31/5*58n
Kulamba Forest or Wildlife Reserve	Sabah			Partially	118*02/5*40n
Samawang, Sandakan	Sabah		1gp/km	class v, vi (no)	117*46/5*53n
Sandakan Peninsula/Sandakan Bay	Sabah	Mangrove nipah	26gp/km	no	
					118*00/6*00n
Sungai Sibuga, Sandakan	Sabah	Mangrove nipah	1gp/km	class v, vi (no)	118*2/5*55n
Sungai Bongaya	Sabah				117*33/6*9n

Site name	location	Forest type	Population size	Protected area	Lat/Long
Gum Gum Forest Reserve	Sabah			partially	118*0/6*1n
Sungai Mumiang	Sabah				118*18/5*47n
Teluk Sekong (Bay)	Sabah				117*57/5*40
Bikang (Bulus), Lahad Datu	Sabah	Mangrove nipah	22grp	no	118*25/5*0n
Lahad Datu Mangrove FR	Sabah	Mangrove nipah		no	118*25/4*58n
Sakar, Lahad Datu	Sabah	Mangrove nipah	65grp	no	118*20/4*58n
Sungai Tungku, Lahad Datu	Sabah	Mangrove nipah	94grp	no	119*1/5*3n
Sungai Silabukan, Lahad Datu	Sabah	Mangrove nipah	7grp	no	118*27/4*58n
Tingkeyu	Sabah				118*9/4*49n
Tawau Bay	Sabah	Mangrove nipah	0.37grp/km	no	117*32/4*18
Hutan Simpan Kalabakan	Sabah				117*19/4*30n
Kalumpang, Semporna	Sabah	Mangrove nipah	4grp	no	118*19/4*21n
Sapang, Semporna	Sabah	Mangrove nipah	6grp	no	118*11/4*18n
Sipit, Semporna Peninsula	Sabah	Mangrove nipah	1grp	no	118*19/4*37n
Balung Semporna	Sabah	Mangrove nipah	4grp	no	118*22/4*35n
Semporna lowlands	Sabah				118*29/4*27n
Sungai Lokan (Lokan Virgin Jungle Reserve)	Sabah			1852ha forest reserve	117*44-40/5*26-28n
Pangi VJR/Keruak VJR	Sabah			forest reserve	118*17/5*31
Sungai Tengang	Sabah				
Sungai Menanggul	Sabah	Riverine		Part	118*16/5*30n
Sungai Resang	Sabah	Riverine swamp OPP		Part	118*20/5*33n
Sungai Rasig	Sabah	Riverine OPP		n	
Kampung Sukau across river and in forest by edge	Sabah	Swamp, riverine		N	118*17/5*30n
Sungai Sukau	Sabah	Riverine		n	118*17/5*30n
Sungai Tenagang Besar	Sabah	Riverine, Swamp,OPP		part	118*15/5*27n
Pitas	Sabah				117*0/6*45n
Tempurong	Sabah				115*35/5*32n
Bongawan	Sabah				115*48/5*30
Abai	Sabah				118*23/5*41n
Danau Girang FC	Sabah				118*2/5*25n
Kunak Mangrove	Sabah				118*5/4*45n
Ulu Tungus Hutan Simpan	Sabah				117*13/6*2n
Hutan Simpan Deramakot	Sabah				117*28/5*24n
Marudu Bay (North coast)	Sabah				
Silam (East Coast)	Sabah				



Site name	location	Forest type	Population size	Protected area	Lat/Long
<b>Malaysia</b>					
Trusan-Sundar Mangroves	Sarawak				115°14/4'55n
Limbang Mangroves	Sarawak	Mangrove/ nipa palm	160	N under concession license 7837 ha	115°03/4'49n 110°27/1'39
S Sarawak	Sarawak				113°45/3'50n
West of Miri	Sarawak				109°35/1'52n
Samunsam Wildlife Sanctuary	Sarawak	Mangrove, riverine, heath, dry kerangus, lowland forest, tidal and high forest	11.9 ind/km2 (198486) 160 (1988) 5.93?	Y 60.9-228 km2	
Bako National Park	Sarawak	Mangrove heath, lowland forest, tidal forest, and high forest	106-144 (1985)	Y 24 km2	110°29/1'43n
Maludam River Peat Swamp Forest	Sarawak	Peat swamp, tidal and high forest, logging and agriculture	200? (1988)	N 434 km2	111°14/1'28n
Triso	Sarawak			?	111°05/1'37n
P Bruit-Patok	Sarawak			?	111°21/2'34n
Mentawai River (Mulu)	Sarawak				114°52/4'14n
Ulu Sebuyau	Sarawak	Peatswamp forest	200 (1979 but now hunted)	N	111°1/1'26
Sematan mangroves	Sarawak	Mangrove, logging and agriculture		N	109°46/1'48
Sarawak Mangrove Forest Reserve (River Delta and mangrove area Pulau Salak Rajang Delta	Sarawak	Mangrove limestone forest	<200? (1988)	N 131 km2	110°17/1'38
Rajang mangrove	Sarawak			N In logging concession license 32908 ha	111°30/2'24n
Belinsah R	Sarawak	High forest			111°21/2'13n
Santubong Peninsula	Sarawak				109°40/1'51
Samarahan River Delta	Sarawak				110°20/1'44
Ensengai River	Sarawak	Peatswamp forest			110°16/1'42
Sadong River	Sarawak	Peatswamp forest			110°35/1'19
Balai Ringin	Sarawak				110°45/1'32
					110°45/1'2

Site name	location	Forest type	Population size	Protected area	Lat/Long
Simunjan River	Sarawak	Peatswamp forest			110*48/1*18
Strap River	Sarawak	Peatswamp forest			110*2/1*22
Klah River	Sarawak	Peatswamp forest			110*19/1*12
Kabong	Sarawak				111*12/1*55
Saribas Forest Reserve	Sarawak	Peatswamp forest			111*14/1*40
Krian Protection Forest/Meradin River	Sarawak	Peatswamp forest			
Seredeng/Lassa River	Sarawak	Peatswamp forest			111*26/2*19n 112*16/2*01n
Suai River Delta, Niah/ Suai Forest Reserve/ Niah National Park	Sarawak	Peatswamp forest			113*45/3*49
Bangau River to Lawas River/Mangroves	Sarawak	Mangrove Peatswamp forest			115*27/4*55n



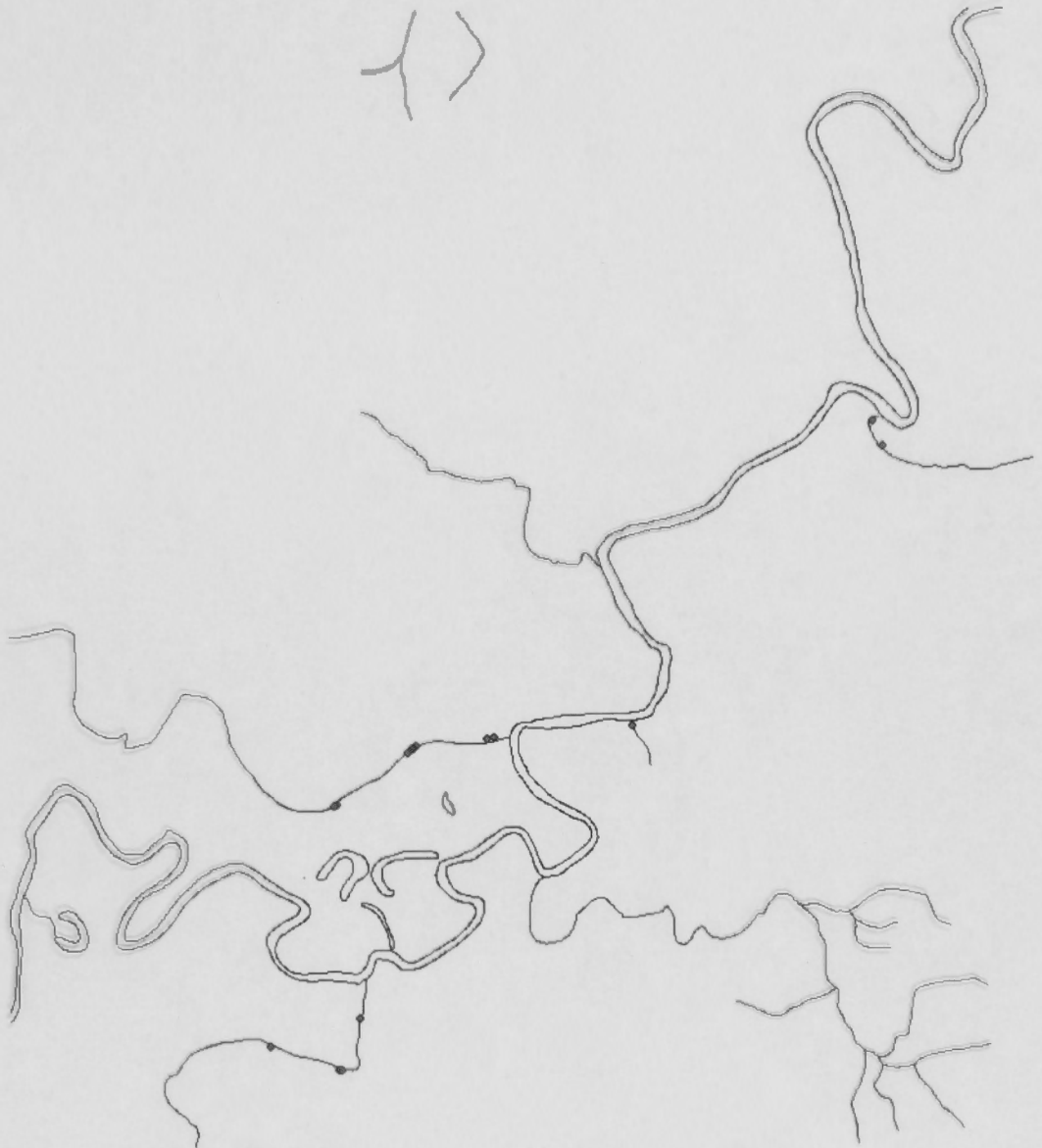
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June 2003

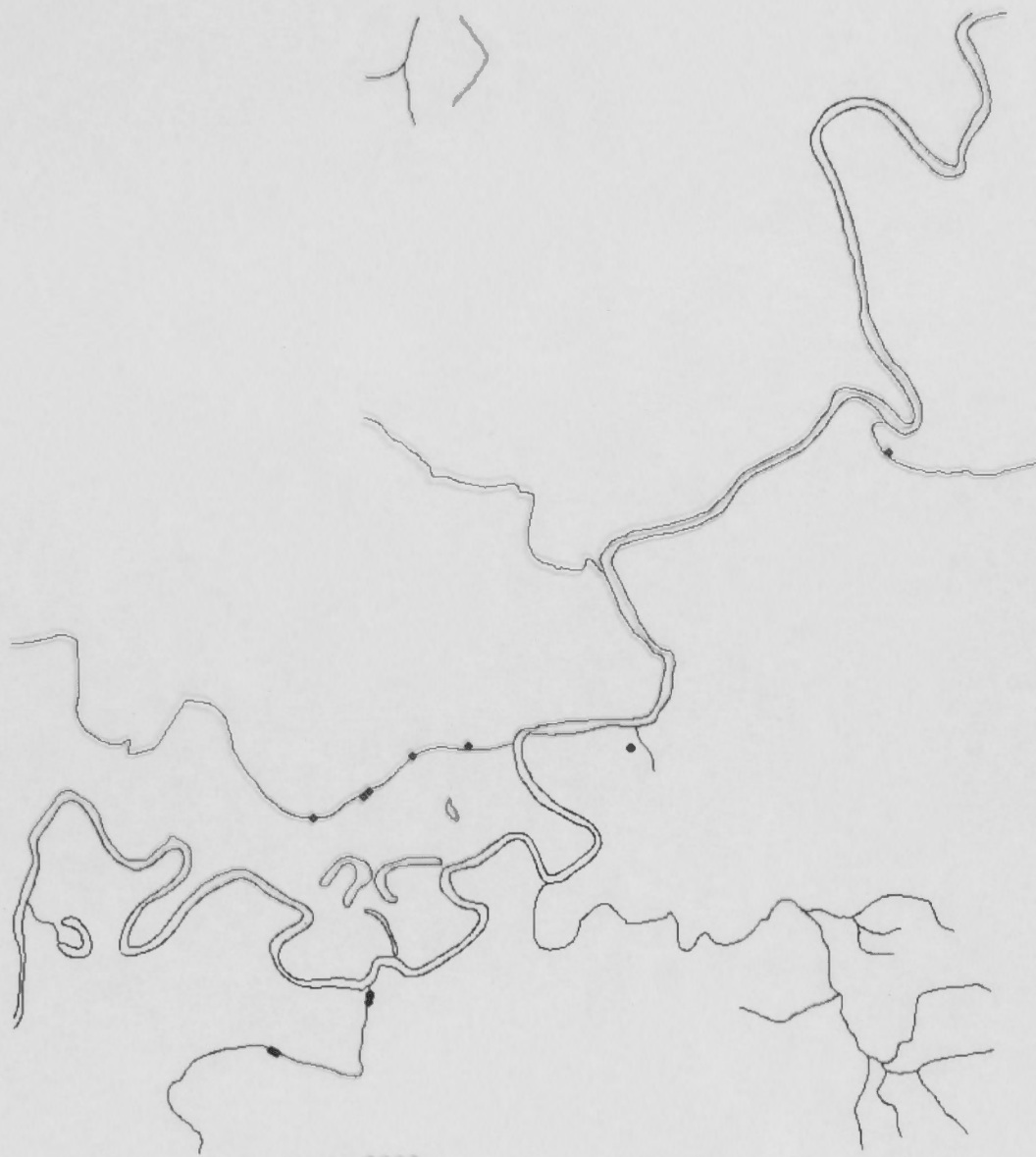


17



July 2003





August 2003





17



September 2003



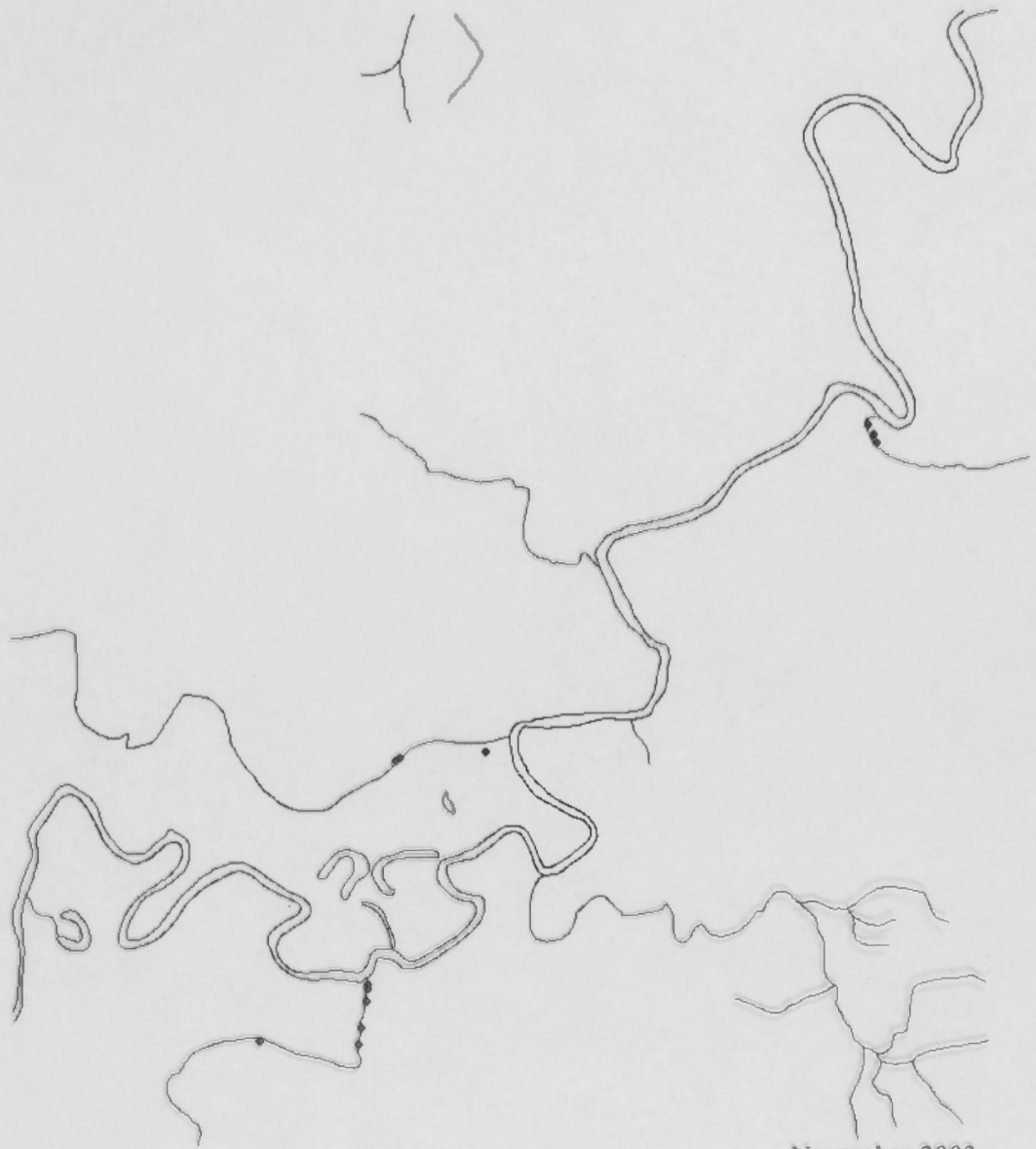
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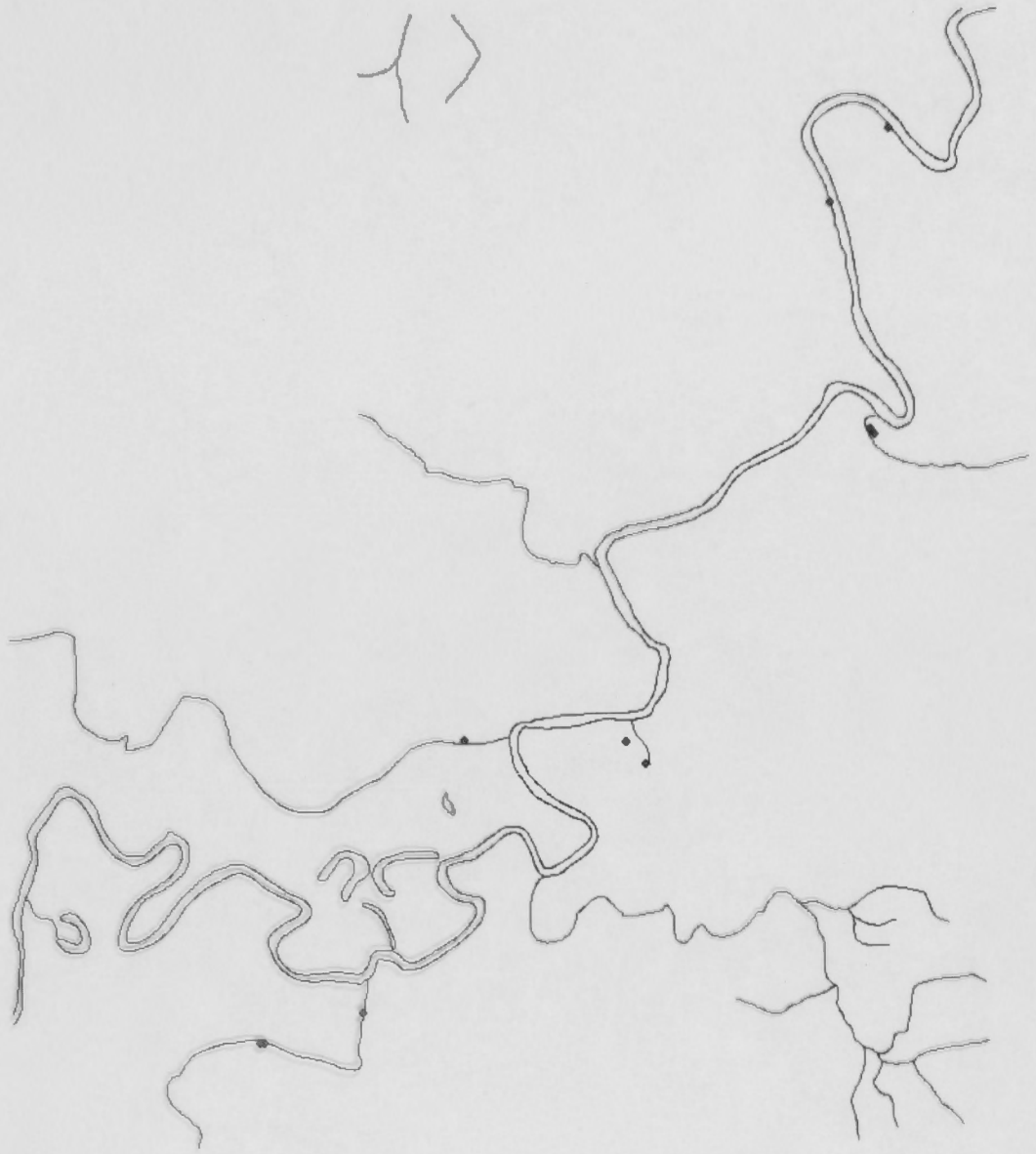
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November 2003



1 >

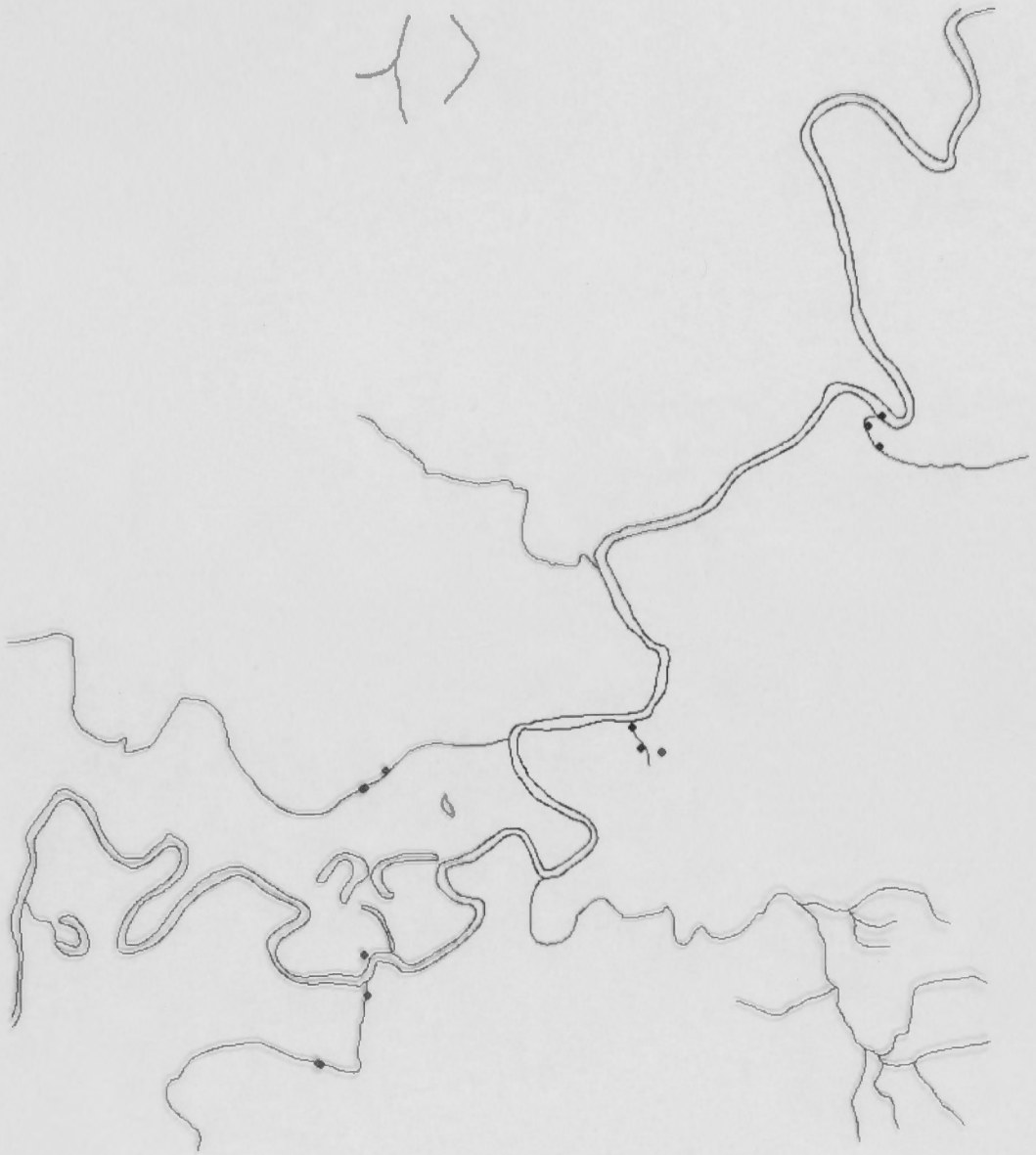


December 2003





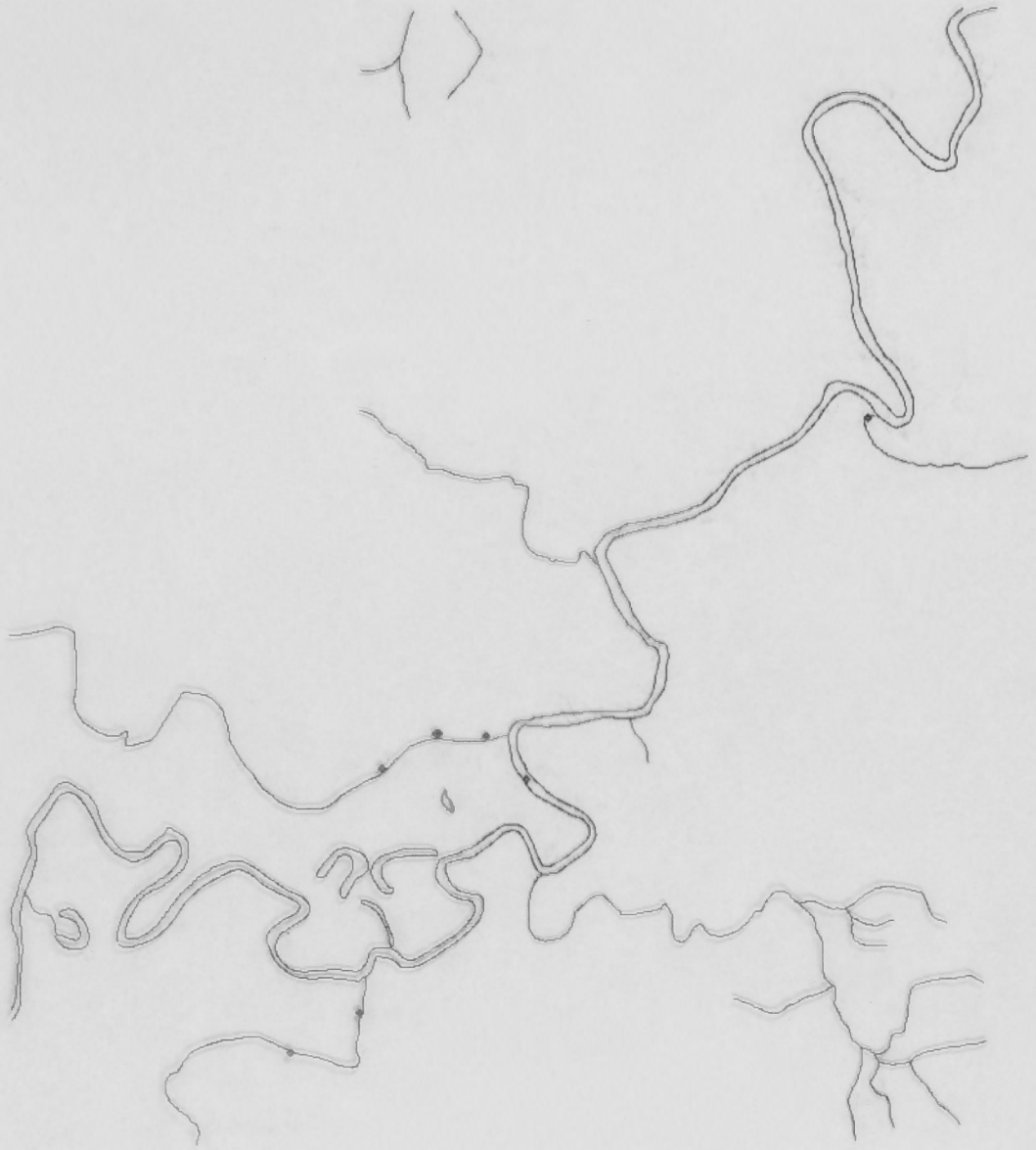
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January 2004



17



February 2004



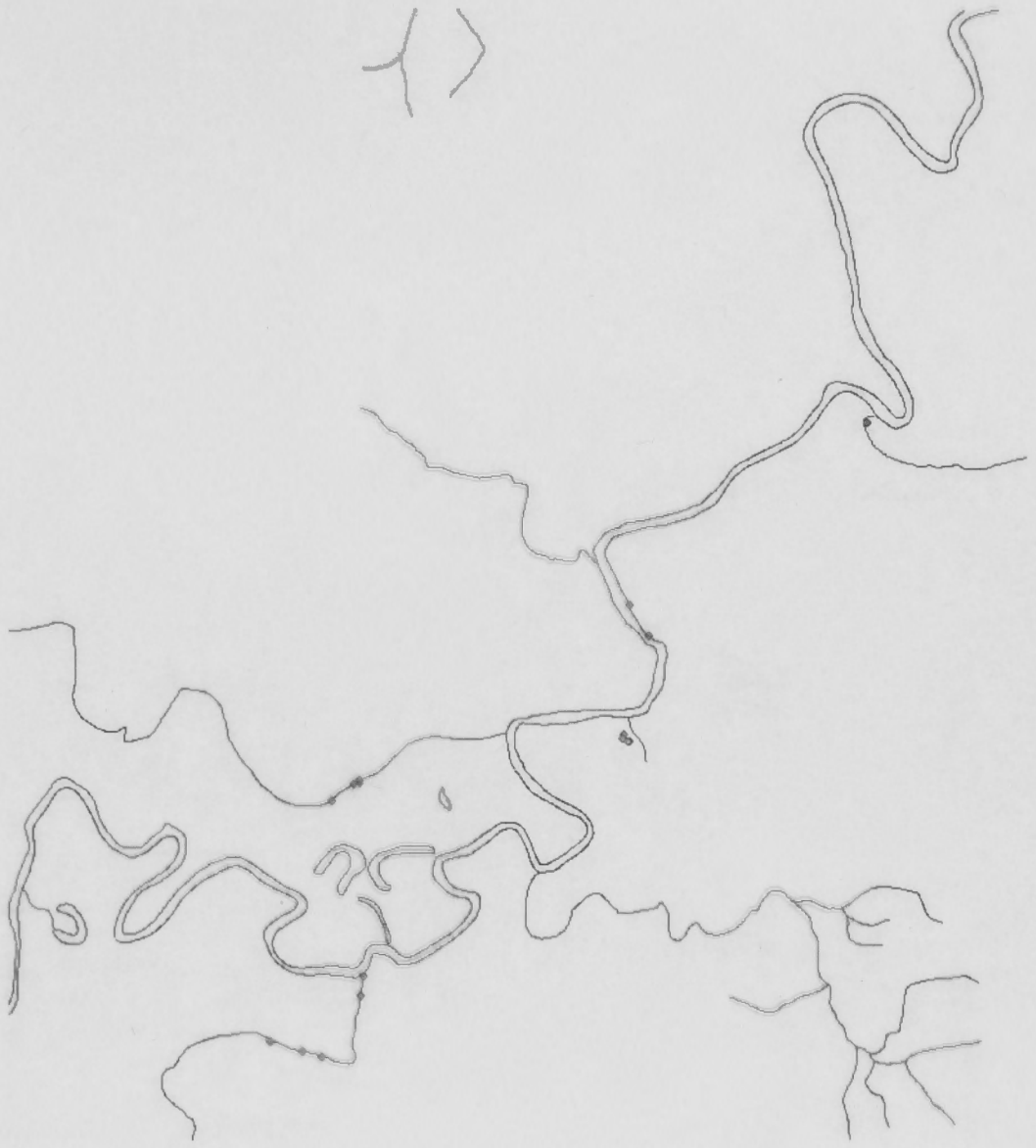


11

March 2004



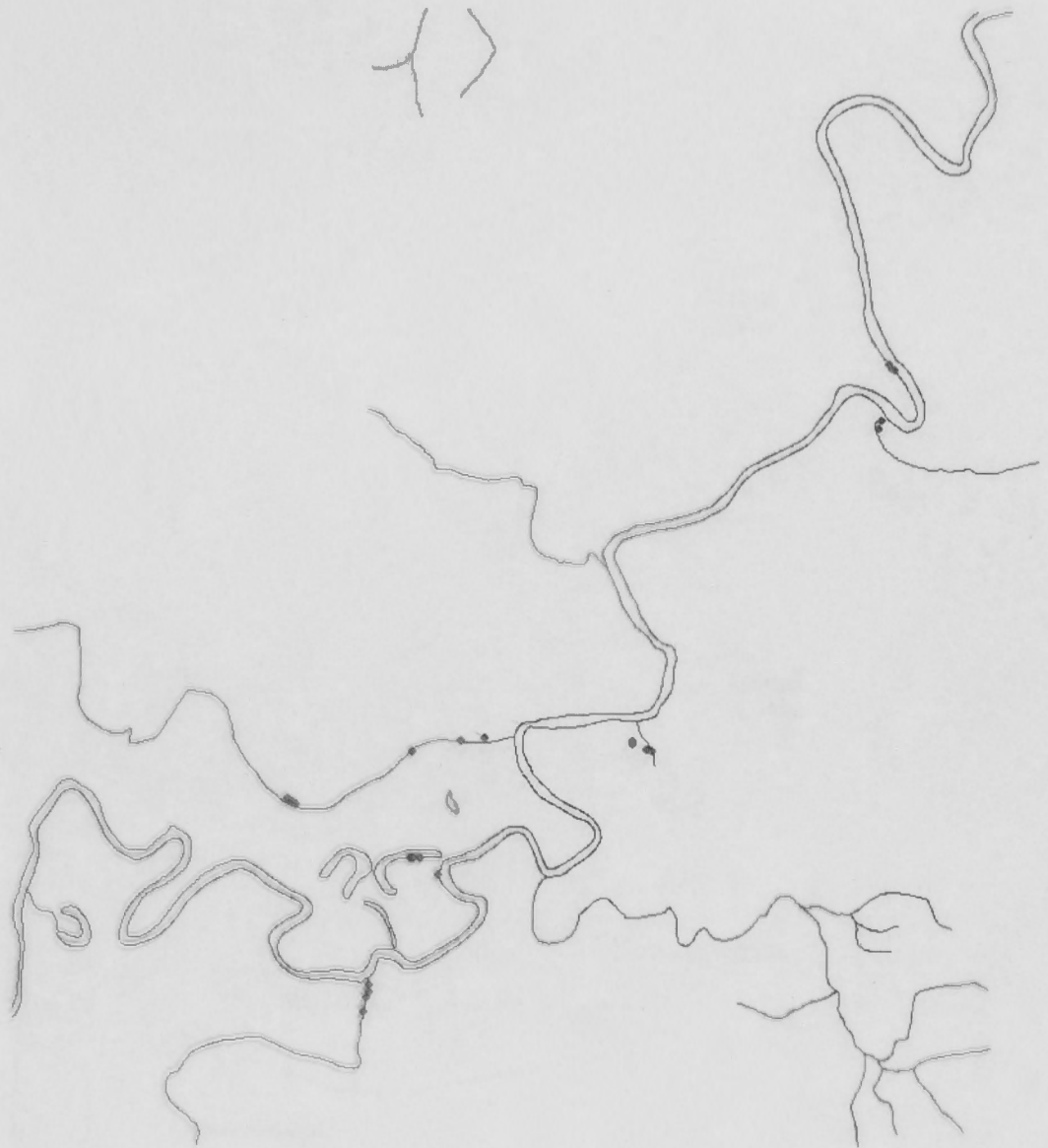
1)



April 2004

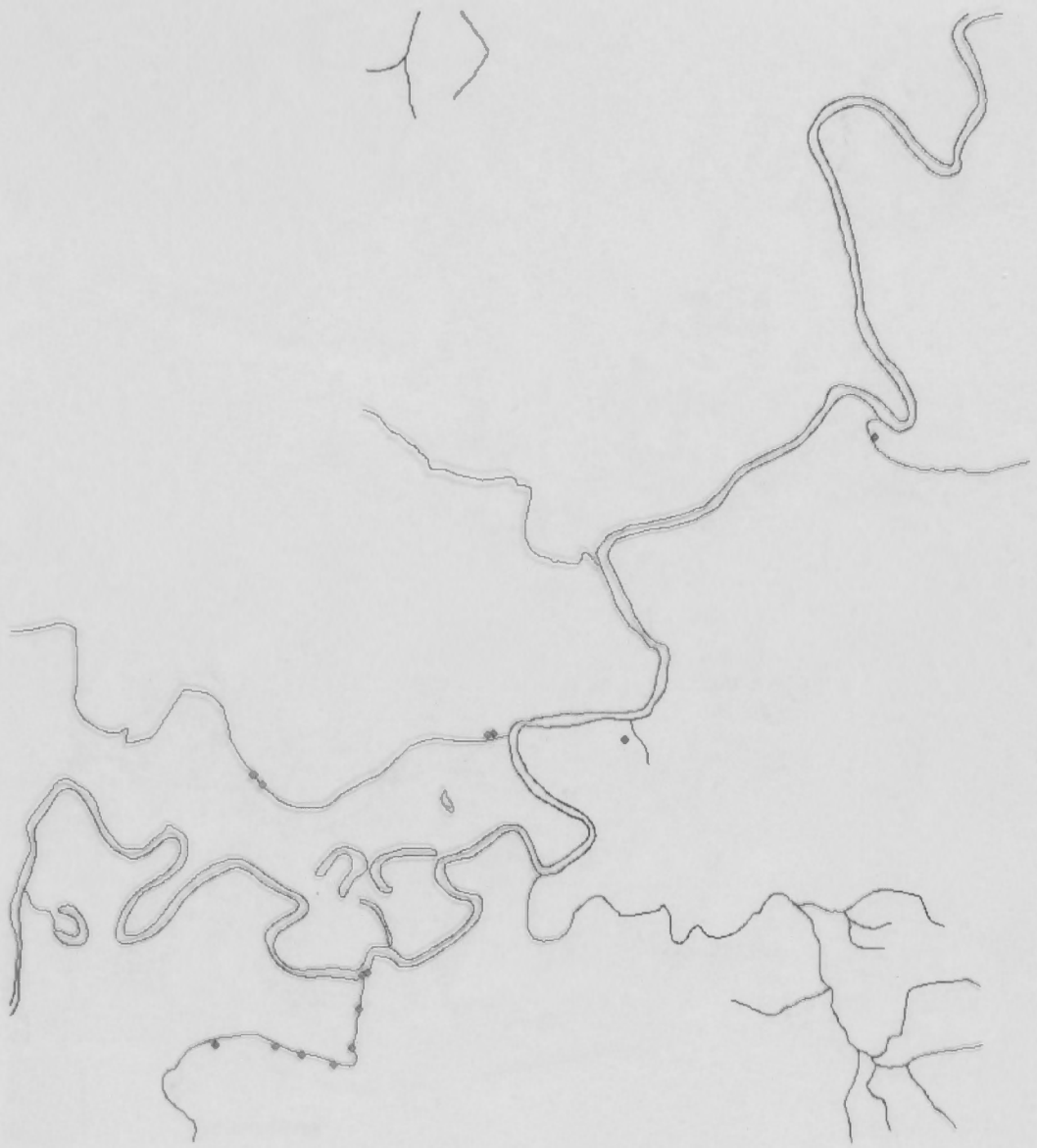






May 2004

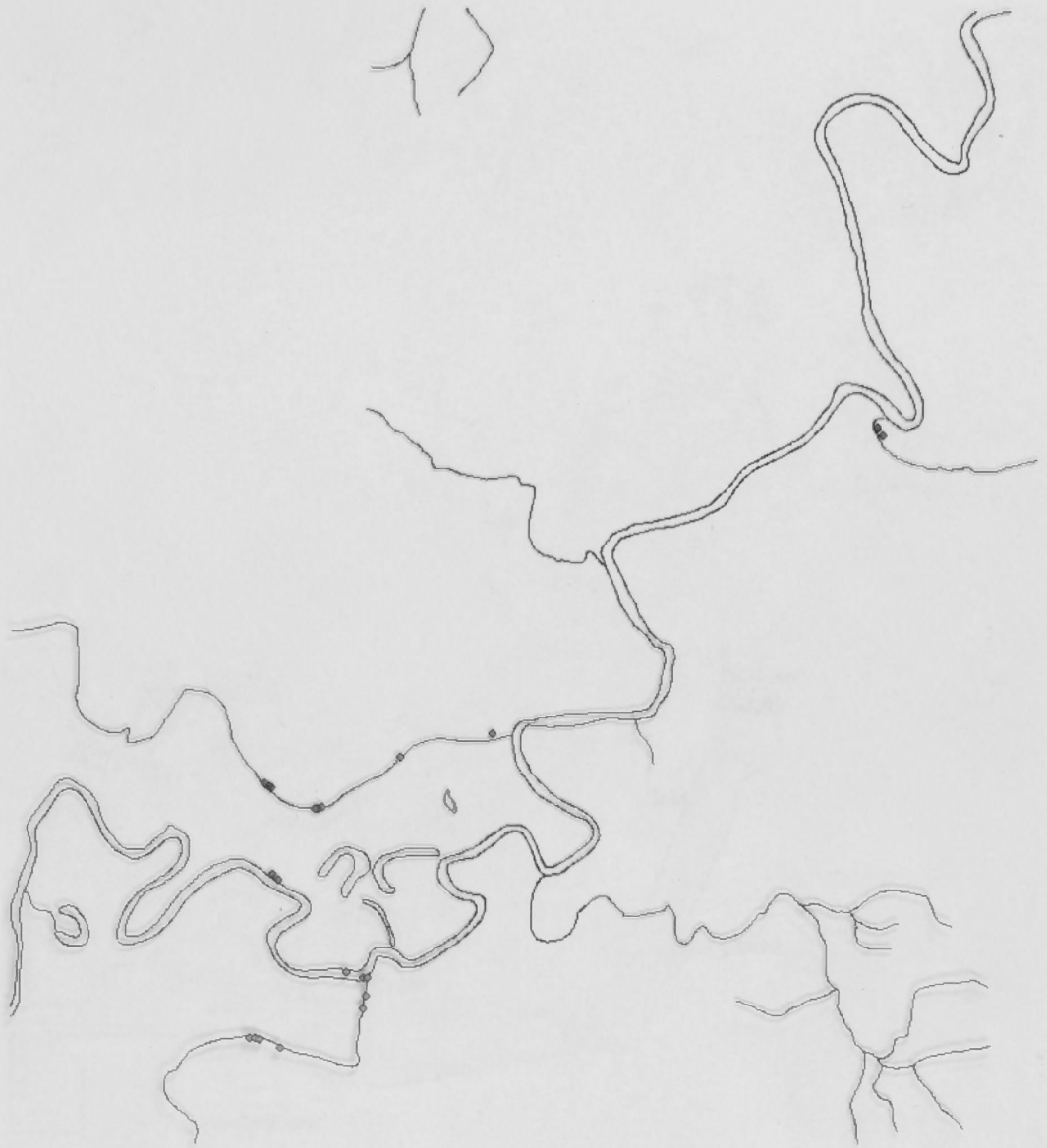




June 2004



1 >



July 2004



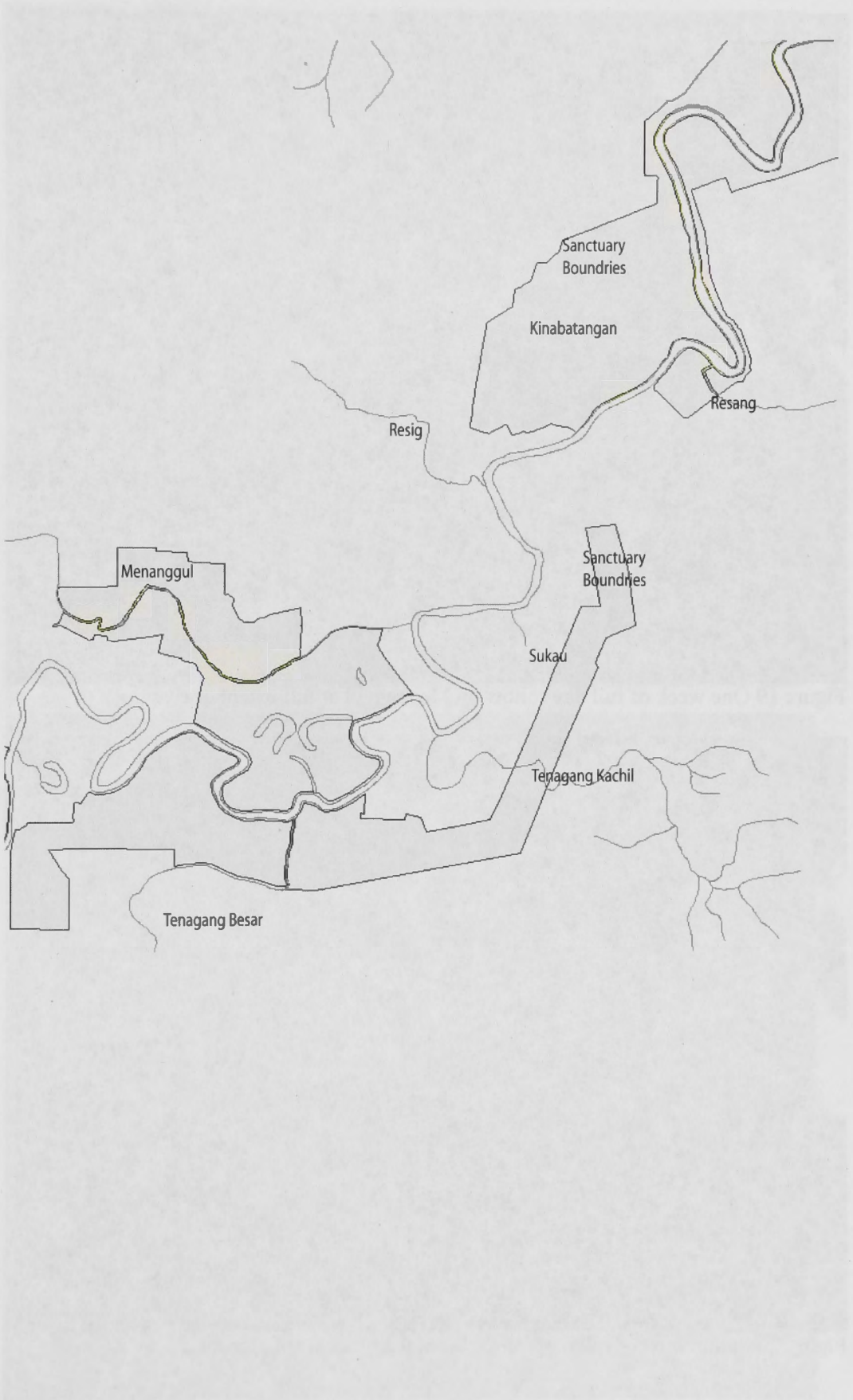


Figure 2.1 Map area of 1987 map (after 1987) Tenaganang mangrove





Figure 19 One week of full day follow on Menanggul at full extent of river.



Figure 20 Same week of full day follow on Menanggul at smaller scale.

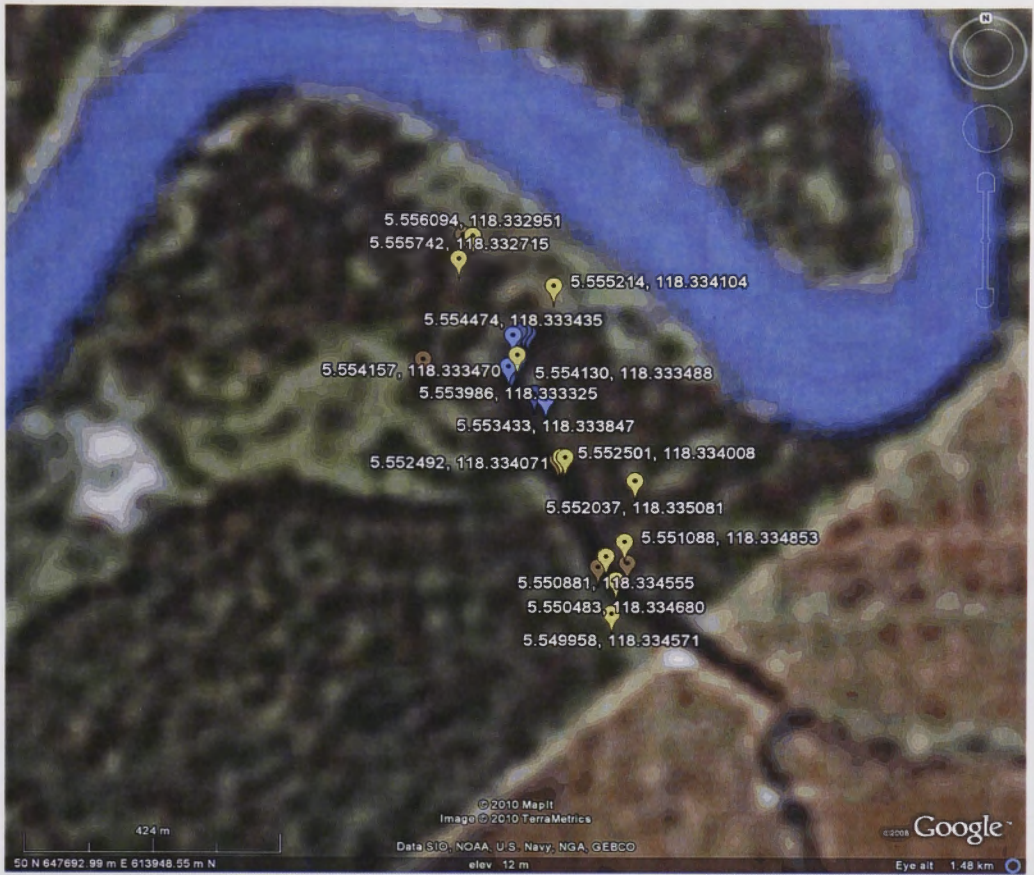


Figure 21 One week of full day follow on Resang.

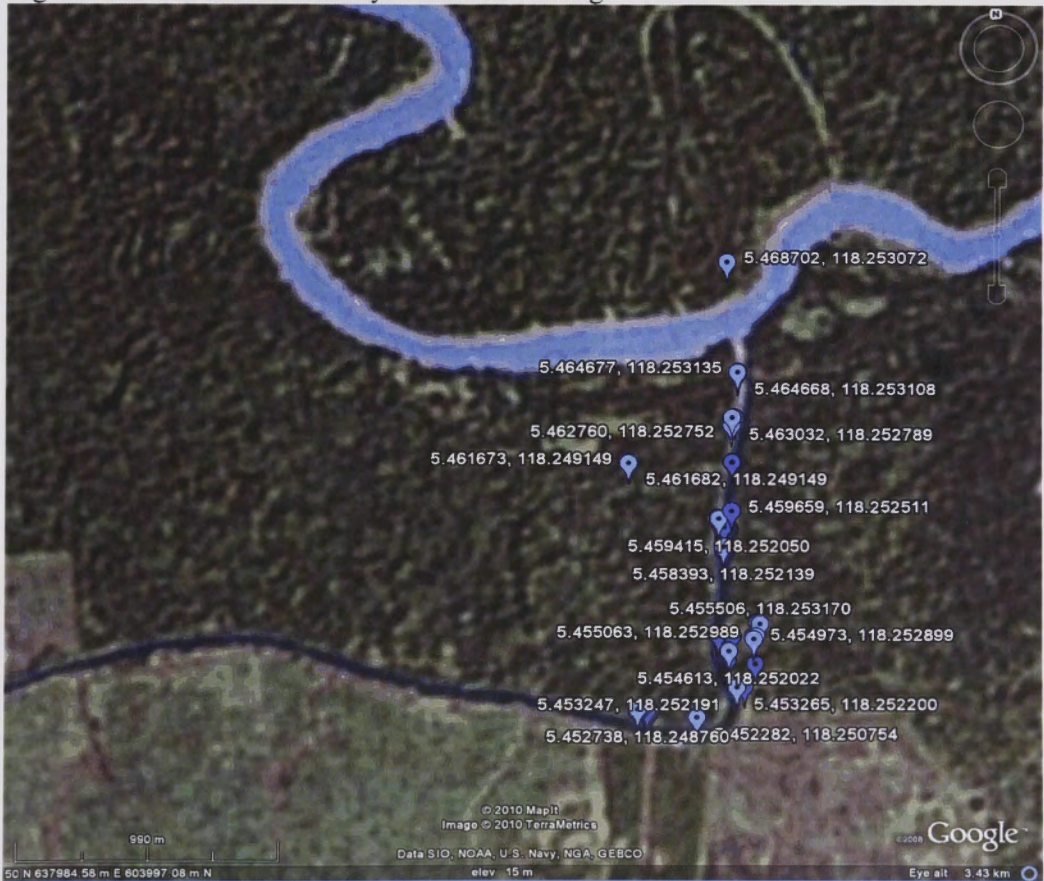


Figure 22 One week of full day follow on Tenagang Besar.



## Appendix B Photographs



Plate I Adult male (penis erect)



Adult male from back



Plate II Adult female



Plate III Subadult male



Plate IV Subadult female

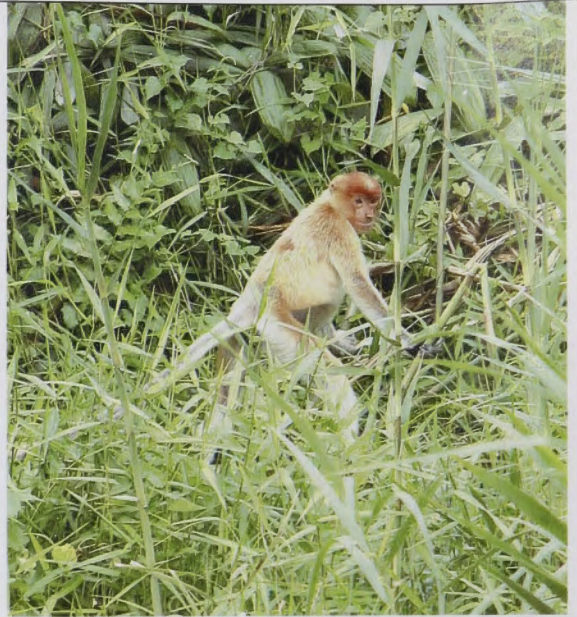


Plate V Juvenile



Plate VI Infant with adult female



Plate VII Subadult adult unknown (no visible nipple, thigh, or groin for identification of sex but based on size and face it is at least subadult) also used when obscured by mass amounts of vegetation.

Activities in the behavioural profile



Figure 8 Rest (AF, AM, SAAU)



Figure 9.1 Travel (in tree)



Figure 9.2 Travel (between tree)



Figure 9.2 Travel (between tree 2)



Figure 9.3 Travel (on ground)



Figure 9.4 Travel (vegetation on ground)



Figure 10 Groom



Figure 11 Eat (male penis flaccid)



Figure 11.1 Eat SAF eat vines



Figure 12.1 Solicitation with pucker face



Figure 12.2 Copulation occurring and additional SAF soliciting



Figure 12.3 Copulate (face pucker and onlooker)



Figure 12.4 Copulate with onlookers



Figure 13 Agonistic



Figure 14 Vigilance





Figure 15 Drink



Figure 16 Group sleep



Figure 17 Group sitting over water



Figure 18 Barge



Figure 19 Human wildlife distance



Figure 20 Boat traffic

Play no photo demonstration available  
Vocalize no photo demonstration available  
Urinate no photo demonstration available  
Defecate no photo demonstration available

\*See enclosed CD for video footage of play, travel, groom, eat and copulate.

## Appendix C Data Sheets

### Key to data sheets

Recorder= researcher doing writing	Researcher= all members of research team collecting data
Date= Day Month Year of census	Form of= form number for that census of the total for that census (1 of 4)
River= river being censused (ABCD or Kin as in Table 5.2)	River level= HT (high tide) LT (low tide) F (flood)
Census = NC or MC (NC= Night census, MC= Morning Census)	Weather Code= three part code from Table 5.1
Start time= time census commenced	End Time= time census finished
Time= time recorded in 24 hour time when a group was spotted	Group= species and group type (for proboscis monkey Table 5.3 OMG, AMG, NBG or ?)
GPS= the UTM reading and accuracy from the GPS	Bank= the river bank which the group is on (Table 5.2)
Marker= the river marker which is closest	Activities of all member visible recorded in age sex categories (table 5.4 & 5.6)
Group spread as in 5.5	Distance from water of AM, J/I Group Centre as in 5.5
Height of AM, J/I Group centre as in Table 5.5	Notes= other information as necessary
DN= Distance near as in Table 5.5	Distance near researcher as in Table 5.5
Distance near water as in Table 5.5	Distance A♂ to J/I= distance of the adult male to the juvenile or infant (closest or group of)
Distance A♂ GC= distance of the adult male to the group centre	Other species= any other species in proximity and distance to them
A♂= Adult male	A♀= Adult female
SA♂=Subadult male	SA♀=Subadult female
SAAU or SAA?= Subadult or adult unknown	J/I = Juvenile / Infant

Table 1 Pre-set data sheet for Census data collection.

Recorder	Date	Form	of	river	Census	Start time	End time														
Researcher				River level	Weather Code																
Activities of															Distance from water			Height			
Time	Group	GPS	Bank	Marker	A♂	A♀	SA♂	SA♀	SAAU?	J	I	Unknown	Estimate	Spread	group centre	A♂	J/I	Group centre	A♂	J/I	Note

Scan of actual census data sheet

Recorder HCL Date 18/9/ Form 1 002 River A Census MC Start Time 5:54 End Time 7:55  
 50 Researcher HCL/JW River level HT Plain level      Temp Max      Temp Min      Weather Code A II

Time	Group ID	TYPE	GPS	MARKER	A♂	A♀	SA♂?	SA♀	J	I	?	Estimate	Spread	Dist From River	Sex	Gen H	A♂ H	J/I H	Notes
5:58	PMG	OMG	05 50505 (16)	N 400°	SL	SL			SL	SL			20	2	vis	18	18	18	5.0 Elect Dead
6:07	LTM		118 27306	N/S 400°															6.4
6:09	LTM		05 50522 (65)	S 450°															5.4
6:27	OMG		118 27354						EA	SL?			15	1	vis	20	17	20	Fiber LTM in focus
6:34	LTM		05 50161 (14)	N 2175°	SL														
6:37	LTM		118 28347	N 2175-2225					Threat	Call				Over	vis	35	1/2	3	Group small N side
6:50	OMG			N 2425°									20	15				20	

Table 2 Pre-set data sheet for Census Boat data collection.

Recorder		Date		form		of		river		Census		Start time		End time						
Researcher		River level		Weather code																
										Distance near			Distance Researcher							
Time	Group	GPS	Marker	B#	B1	B2	B3	B4	B5	B6	B7	B8	B9	Group Centre	who	A ♂	A ♂	Group Centre	Other species	Notes

Scan of actual census boat data sheet

Recorder HCL 110 Researcher HCL MS AVT Date 24/1/04 Form 1 (45)										River A Census NC Start 4:32 End 6:10 Time 111									
River bel LT River level										wc. A 8 III									
Time	Group	GPS/MARKER	B#	B1	B2	B3	B4	B5	B6	B7	B8	P G/C	D near + Lx	D A♂	D A♂	D Near Lx	D GC	Other Spc.	Notes
4:52	AMG?	NA 2450m	SB 3	3/4/1/1	1/1/1/1	1/1/1/1						7	50m SA? 12mH	5	25	25	25	LTM	TS 6.3
4:58	??	SUN 0637 148 (14.7) NA 2450m	1		SIT	SIT										14m SA? 10mH			Heavy rain just finish New occasional light drizzle with rain
5:08	OMG	NA 2875	3		5/1/1	6/5/1						5	SA? 3	8	16	SA? 15	16		6.7 6.2 both engines
5:10	OMG																		
5:12	OMG	(18.0) SUN 0638 046 0607 805	NB 1	3/1/1															
5:21	OMG		SB 4	3/1/1	1/1/1	6/5/1							2m from P SA? 5m						PIM (SB) LTM (SB) SB

Table 3 Pre-set data sheet for Full Day Follow data collection

Recorder		Date		River		Form		of											
Researcher			River level			Weather code													
Time	Group	GPS Marker	Activity	Spread	Distance Near			Height	Distance near Researcher			H R	D A♂		Height	Distance to water		Note	
					Who	A♂	J/I		Group Centre	who	A♂		J/I	Group centre		who	J/I		Group Centre

Scan of actual full day follow data sheet

140 Recorder: 45 Date: 18/10/04 Form 2 of 2 River: A Weather code: A6I 141

Researcher: HT, HCL, MR River Level: flood

Time	Group	GPS	Activity	SP	DN who	DN A♂	DN J/I	DN GIC	HN who	DR	DR N	DR N	DR N	HR	D A♂	D A♂	Dist. other sp.	H A♂	H J/I	H GIC	Dist. A♂	Dist. J/I	Dist. GIC	Notes
17:20	Ang	504 (69.8) 0637575 0608470 NA BANK	SABTR SABTR SABTR SABTR SABTR SABTR SABTR SABTR	50	10	-	0:12	5	18	1	0	17	8	0	0	0	1	0	2/3	0	0	0		
17:30	4	504 (16.6) 0637609 0608448 NA BANK	SABTR SABTR SABTR SABTR SABTR SABTR SABTR SABTR SABTR SABTR SABTR	50	12	15	10	7	20	17	17	2	1	0	1	0	8	1	0/12	1	1	1		

Table 4 Pre-set data sheet for Full Day Follow Boat data collection

Recorder		Date		form		of													river	
Researcher		River level											Weather code							
														Distance near		Distance Researcher				
Time	Group	GPS	Marker	B#	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	Notes

Scan of actual full day follow boat data sheet

12 RECORDER HCL DATE 03/14/03 FORM 1 RIVER A WEATHER CODE A  $\frac{8}{S}$  I

RESEARCHER HCL HT RIVER LEVEL RAIN LEVEL TEMP FAX TEMP FAX

TIME	GROUP	GPS/MARKER	B#	B1	B2	B3	B4	B5	B6	B7	B8	MARK TREE	PLOT	GPS	GROUP CENTRE	NOTE
6:20	AMG	3050	8													6:20 6:24 6:26 6:28
16:30	AMG	3050 SONOL 30674 (22) 06-07-630	1	4 Ph. in								17:01	17:27	17:44		6:054 LTM in adjacent tree Group Make up + watch Boat
17:07-	AMG		6	4 stop near	4 stop near	4 stop near	18 Loud near	18 Talk near	18 Talk near	4 Talk near	4 Talk near	4 Talk near	4 Talk near	4 Talk near		Engine loud/Monkeys vocal + MOK
				17:18								17:35	17:50			
				17:21								17:35	18:05			Localize 3rd last boat
				17:52								17:39				



## Appendix D Phenology

### ***Meteorology data from region***

Table 1 Weather data recorded at Sandakan Weather station for the time of the field study.

Weather for comparison for Sandakan, Sabah, Malaysia Climatological Information

Month	Mean Temperature °C		Mean Total Rainfall (mm)	Mean Number of Rain Days
	Daily Minimum	Daily Maximum		
Jan	23.7	29.3	398.2	17
Feb	23.6	29.6	303.8	13
Mar	23.8	30.6	152.9	9
Apr	24.0	31.7	114.1	7
May	24.1	32.6	125.0	9
Jun	23.9	32.4	195.1	11
Jul	23.5	32.3	202.3	12
Aug	23.5	32.5	223.6	12
Sep	23.4	32.1	225.1	12
Oct	23.5	31.6	284.0	15
Nov	23.6	30.8	334.7	18
Dec	23.7	29.9	458.6	20

Remarks:

- \* Climatological information is based on monthly averages for the 30-year period 1971-2000.
- \* Mean number of rain days = Mean number of days with at least 1 mm of rain.
- \* Attention: Please note that the averaging period for climatological information and the definition of "Mean Number of Precipitation/Rain Days" quoted in this web site may be different for different countries. Hence, care should be taken when city climatologies are compared.

<http://www.worldweather.org/020/c00091.htm> accessed December 2009



## Meterology From Current Study

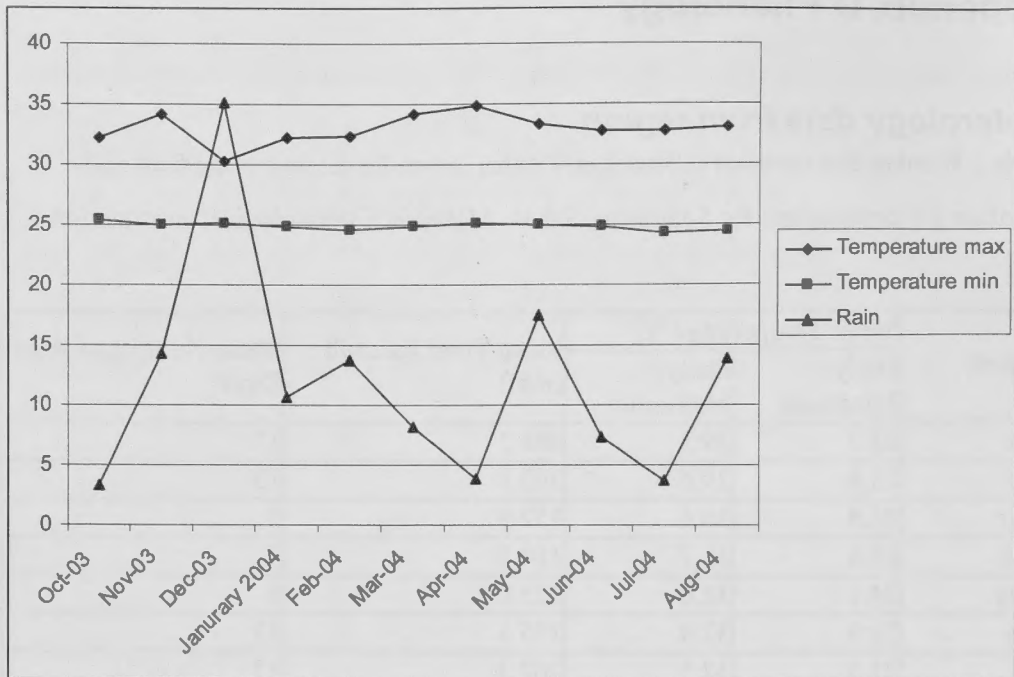


Figure 1 Temperature maximum, temperature minimum, and average rainfall per month recorded over the study.

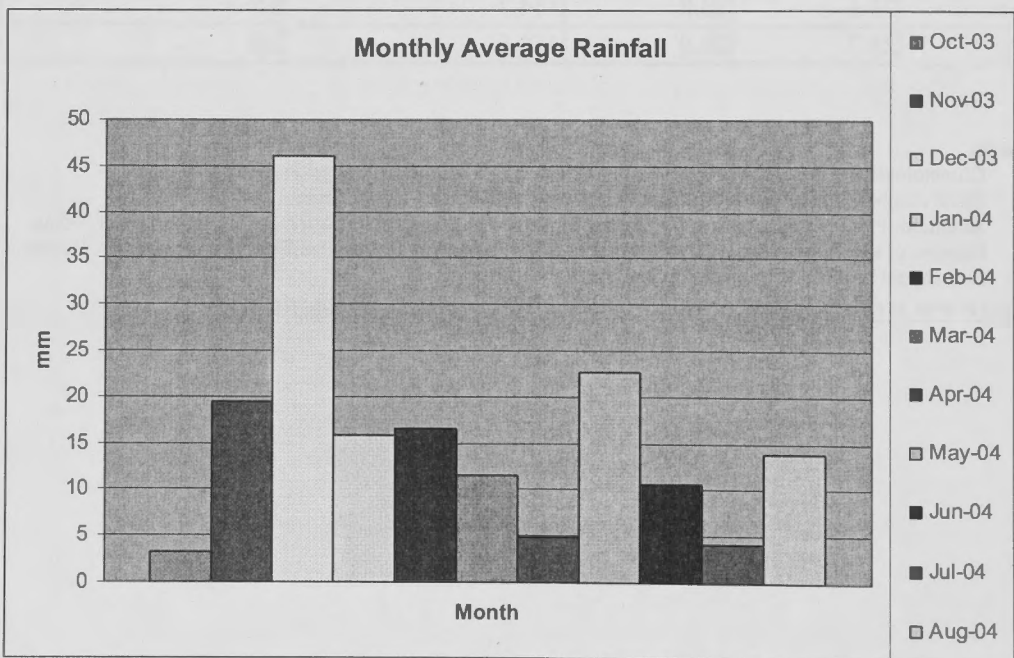


Figure 2 The average rainfall for each month from October 2003-end of study August 2004

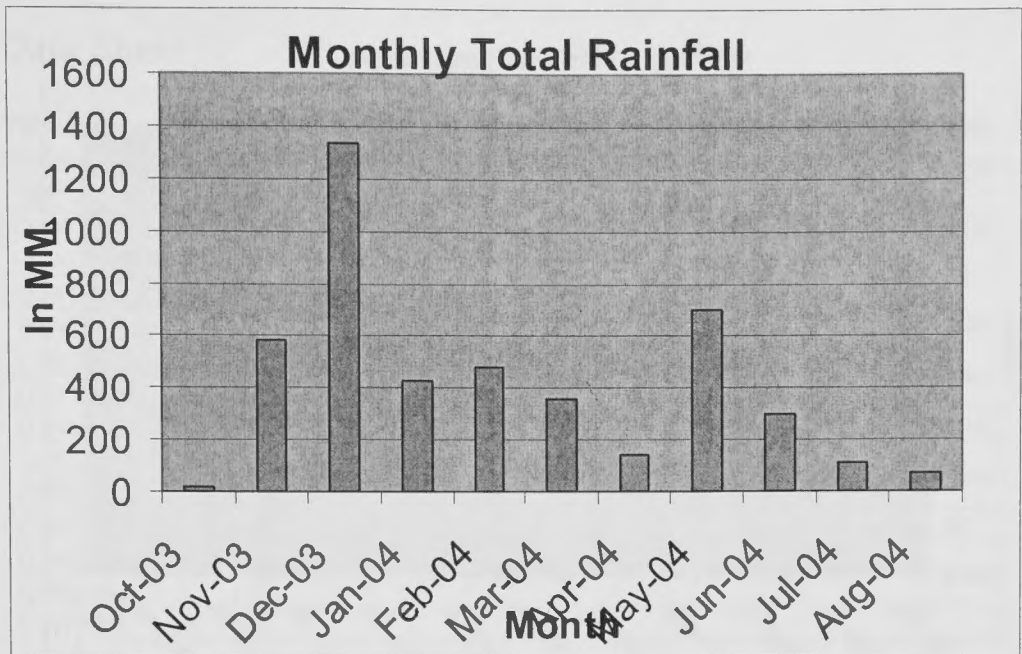


Figure 3 Total rainfall per month from end of October 2003- end of study August 2004

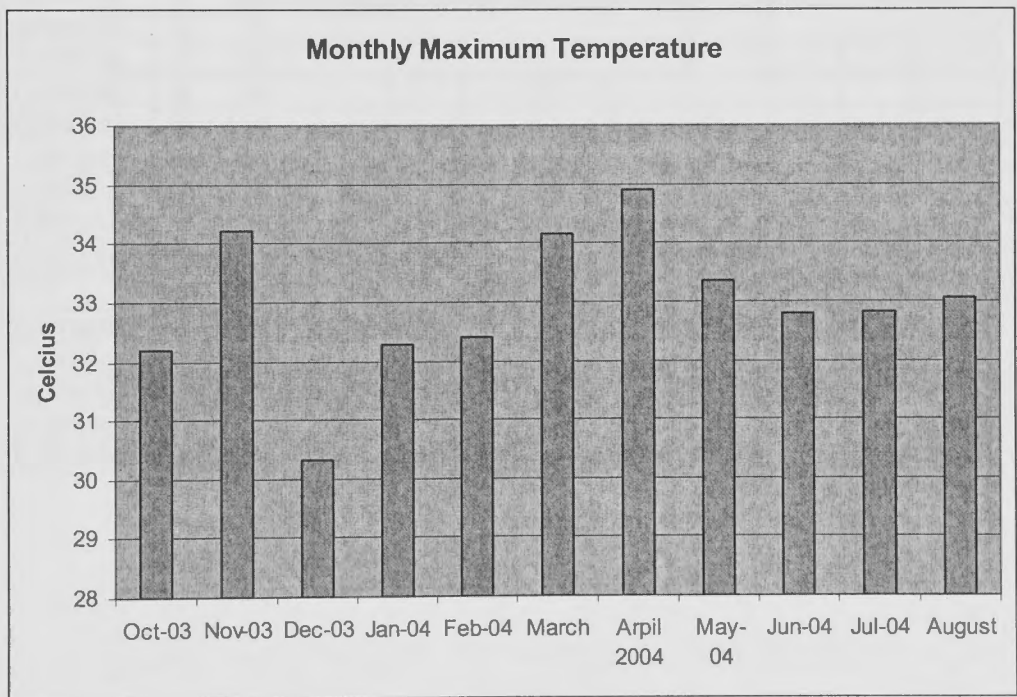


Figure 4 Average Maximum temperature per month from October till August

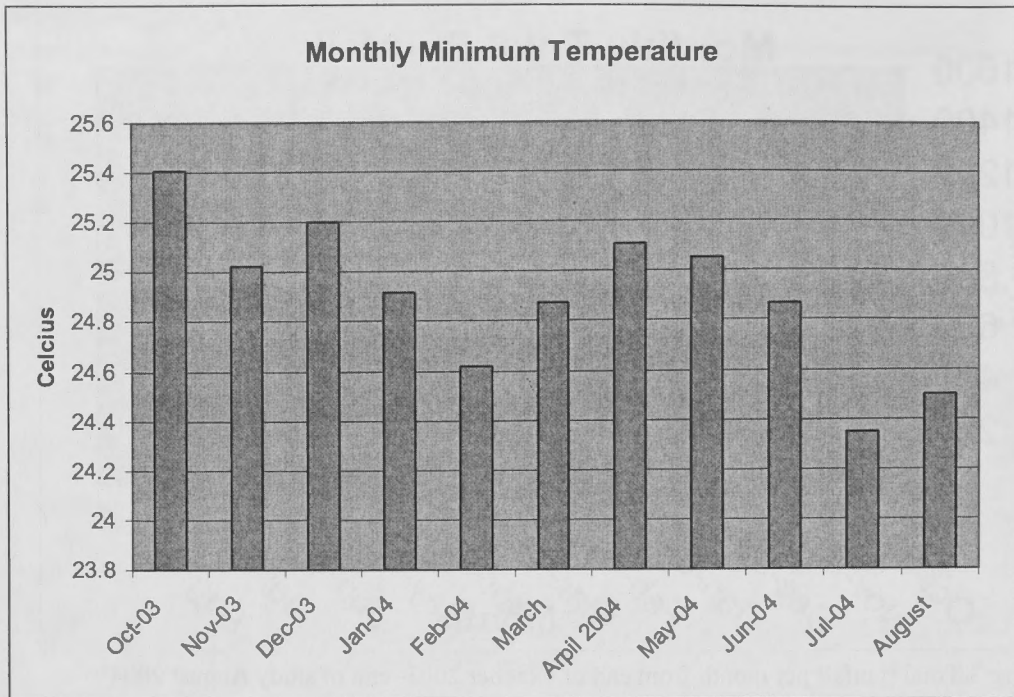


Figure 5 Average Minimum temperature per month from October to August

## Data Sheet

Table 2 Sample of the data sheet this was done for each quadrat on each river each month.  
 D=dead, M= mature leaf, Y=young leaf, UF=unripe fruit, RF=ripe fruit, S=seed, FL=flower,  
 FLB=flower bud

Quad	Tree	GBH	D	M	Y	UF	RF	S	FL	FLB
Q2WD200	1	270								
Q2WD200	2	56								
Q2WD200	3	49								
Q2WD200	4	68								
Q2WD200	5	38								
Q2WD200	6	33								
Q2WD200	7	40								
Q2WD200	8	163								
Q2WD200	9	71								
Q2WD200	10	53								
Q2WD200	11	33								
Q2WD200	12	70								
Q2WD200	13	35								
Q2WD200	14	107								
Q2WD200	15	150								
Q2WD200	16	33								
Q2WD200	17	83								
Q2WD200	18	40								
Q2WD200	19	55								
Q2WD200	20	38								
Q2WD200	21	46								
Q2WD200	22	48								
Q2WD200	23	61/54/17/23								
	23B									
Q2WD200	24	223								
Q2WD200	25	145								
Q2WD200	26	47								
Q2WD200	27	160								
Q2WD200	28	42								

## Tree Phenology over Months

Table 3 Multivariate General Linear Model of Phenology by season and river. Three tables detailing the factors, tests and results.

### Between-Subjects Factors

	Value Label	N
season	1.00 normal	40
	2.00 flooding	19
river	1.00 Menanggul	22
	3.00 Sg. Resang	19
	4.00 Tenang Besar	18

### Multivariate Tests<sup>c</sup>

Effect	Value	F	Hypothesis df	Error df	Sig.	
season	Pillai's Trace	.225	1.988 <sup>a</sup>	7.000	48.000	.076
	Wilks' Lambda	.775	1.988 <sup>a</sup>	7.000	48.000	.076
	Hotelling's Trace	.290	1.988 <sup>a</sup>	7.000	48.000	.076
	Roy's Largest Root	.290	1.988 <sup>a</sup>	7.000	48.000	.076
river	Pillai's Trace	.917	5.931	14.000	98.000	.000
	Wilks' Lambda	.266	6.442 <sup>a</sup>	14.000	96.000	.000
	Hotelling's Trace	2.072	6.957	14.000	94.000	.000
	Roy's Largest Root	1.656	11.594 <sup>b</sup>	7.000	49.000	.000

a. Exact statistic

b. The statistic is an upper bound on F that yields a lower bound on the significance level.

c. Design: season + river + Censcode

### Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Model	Mature Leaf	396501.725 <sup>a</sup>	5	79300.345	1053.667	.000
	Young Leaf	12923.991 <sup>b</sup>	5	2584.798	39.949	.000
	seed	1.717 <sup>c</sup>	5	.343	2.681	.031
	Flower or flower bud	222.679 <sup>d</sup>	5	44.536	12.335	.000
	Unripe or ripe fruit	118.824 <sup>e</sup>	5	23.765	27.698	.000
	Number of Boats	470.452 <sup>f</sup>	5	94.090	23.682	.000
	Total individuals on river during census	17697.812 <sup>g</sup>	5	3539.562	17.252	.000
season	Mature Leaf	67.200	1	67.200	.893	.349
	Young Leaf	65.779	1	65.779	1.017	.318
	seed	.223	1	.223	1.744	.192
	Flower or flower bud	.072	1	.072	.020	.888
	Unripe or ripe fruit	6.444	1	6.444	7.510	.008
	Number of Boats	.032	1	.032	.008	.929
	Total individuals on river during census	10.205	1	10.205	.050	.824
river	Mature Leaf	28.665	2	14.332	.190	.827
	Young Leaf	88.689	2	44.345	.685	.508
	seed	.738	2	.369	2.880	.065

	Flower or flower bud	20.674	2	10.337	2.863	.066
	Unripe or ripe fruit	6.042	2	3.021	3.521	.037
	Number of Boats	114.659	2	57.329	14.429	.000
	Total individuals on river during census	6478.525	2	3239.262	15.788	.000
Error	Mature Leaf	4064.108	54	75.261		
	Young Leaf	3493.900	54	64.702		
	seed	6.918	54	.128		
	Flower or flower bud	194.966	54	3.610		
	Unripe or ripe fruit	46.333	54	.858		
	Number of Boats	214.548	54	3.973		
	Total individuals on river during census	11079.188	54	205.170		
Total	Mature Leaf	400565.833	59			
	Young Leaf	16417.891	59			
	seed	8.636	59			
	Flower or flower bud	417.645	59			
	Unripe or ripe fruit	165.157	59			
	Number of Boats	685.000	59			
	Total individuals on river during census	28777.000	59			

a. R Squared = .990 (Adjusted R Squared = .989)

b. R Squared = .787 (Adjusted R Squared = .767)

c. R Squared = .199 (Adjusted R Squared = .125)

d. R Squared = .533 (Adjusted R Squared = .490)

e. R Squared = .719 (Adjusted R Squared = .693)

f. R Squared = .687 (Adjusted R Squared = .658)

g. R Squared = .615 (Adjusted R Squared = .579)

Table 4 Pair wise comparison between the mature leaf production on three focal rivers Mann Whitney test between rivers for Mature leaf production.

	Menanggul	Resang
Resang	Z=- 1.699 Asymp. Sig. (2-tailed) =.089	
Tenang Besar	Z=- .660 Asymp. Sig. (2-tailed) =.509	Z=-.189 Asymp. Sig. (2-tailed) =.850

Table 5 Pair wise comparison between young leaf production on the three focal rivers  
Mann Whitney test between rivers for Young leaf production.

	Menanggul	Resang
Resang	Z=- .094 Asymp. Sig. (2-tailed) =.925	
Tenangang Besar	Z=- .495 Asymp. Sig. (2-tailed) =.620	Z=- 1.321 Asymp. Sig. (2-tailed) =.187

Table 6 Pair wise comparison between fruit production on the three focal rivers  
Mann Whitney test between rivers for Fruit production (unripe and ripe combined).

	Menanggul	Resang
Resang	Z=- 2.171 Asymp. Sig. (2-tailed) =.030	
Tenangang Besar	Z=- .743 Asymp. Sig. (2-tailed) =.458	Z=-1.227 Asymp. Sig. (2-tailed) =.220

Table 7 Pair wise comparison between flower production on the three focal rivers  
Mann Whitney test between rivers for Flower production (flower and flowerbud combined).

	Menanggul	Resang
Resang	Z=- .994 Asymp. Sig. (2-tailed) =.345	
Tenangang Besar	Z=- .413 Asymp. Sig. (2-tailed) =.680	Z=-.661 Asymp. Sig. (2-tailed) =.509

Table 8 Pair wise comparison between seed production on the three focal rivers  
Mann Whitney test between rivers for Seed production.

	Menanggul	Resang
Resang	Z=- 1.314 Asymp. Sig. (2-tailed) =.189	
Tenangang Besar	Z=- 1.139 Asymp. Sig. (2-tailed) =.255	Z=-.636 Asymp. Sig. (2-tailed) =.525

*For referance in tables and figures Dec, Jan, Feb, March= Flood Season, 1= Jan, 2=Feb, 3=Mar, 4=Apr, 5=May, 6=June, 7=July, 8=Aug, 9=Sept, 10=Oct, 11=Nov, 12=Dec*

Table 9 The Mean mature leaf production from all plots on the river over months for the three focal rivers.

rivercod	month	Mean	Std. Deviation	Count	
Menanggul	Jan	87.8107	12.69302	708	
	Feb	83.7239	15.23133	862	
	Mar	87.0605	19.68584	859	
	Apr	88.4180	17.86050	866	
	May	92.0266	19.03658	866	
	Jun	90.8891	18.17116	866	
	Jul	94.0185	16.69224	866	
	Aug	64.1917	28.06442	866	
	Sep	67.6655	18.56502	861	
	Oct	67.9511	20.56866	859	
	Nov	83.1083	11.87547	859	
	Dec	88.0085	11.26334	708	
	Total	82.7633	20.73834	10046	
	Resang	Jan	79.3401	27.31283	197
Feb		78.0628	23.46142	191	
Mar		82.7919	24.96574	197	
Apr		83.7374	23.52602	198	
May		86.3131	23.73806	198	
Jun		87.9798	22.66417	198	
Jul		88.7879	23.57719	198	
Oct		60.6091	30.66665	197	
Nov		81.0660	14.82485	197	
Dec		80.6283	25.33197	191	
Total		80.9531	25.41364	1962	
Tenagang Besar		Jan	78.0488	23.01477	410
		Feb	78.5138	19.02476	545
		Mar	85.5872	16.94021	545
	Apr	85.1548	20.21381	549	
	May	88.4882	21.26669	549	
	Jun	90.6193	19.87137	549	
	Jul	91.7668	20.35211	549	
	Aug	70.0497	20.46992	543	
	Sep	74.2357	18.45798	543	
	Oct	75.7643	15.55005	543	
	Nov	79.0244	10.05009	205	
	Dec	86.1326	14.31579	543	
	Total	82.2249	20.05933	6073	
	Total	Jan	83.4981	19.61402	1315
Feb		81.2703	17.91445	1598	
Mar		86.0337	19.58737	1601	
Apr		86.7328	19.52414	1613	
May		90.1209	20.53565	1613	
Jun		90.4402	19.36632	1613	
Jul		92.6100	19.00946	1613	
Aug		66.4493	25.55971	1409	
Sep		70.2066	18.79173	1404	
Oct		69.6998	21.18599	1599	
Nov		82.1253	12.20539	1261	
Dec		86.3245	15.15408	1442	
Total		82.3860	21.08179	18081	



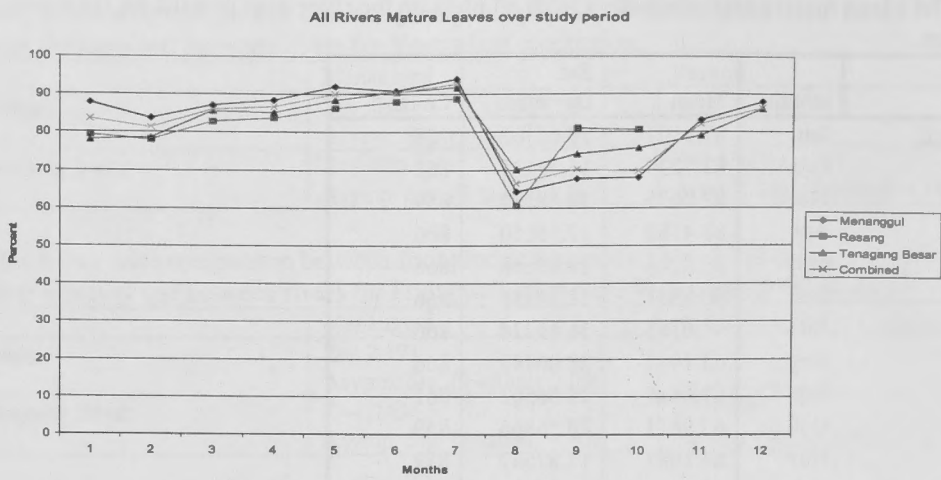


Figure 6 Frequency of mature leaf production by river over the study. Data for the study actually starts at month 8, continues to 12, then 1-7. Main recorder changed in month 11. Thus data from 8, 9, and 10 may be in question.

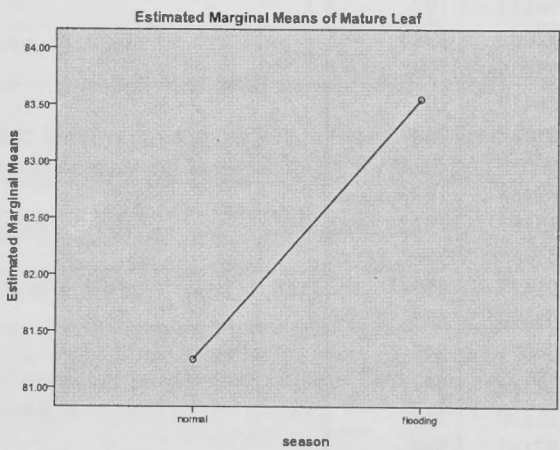


Figure 7 Multivariate General Linear Model season effects on mature leaf.

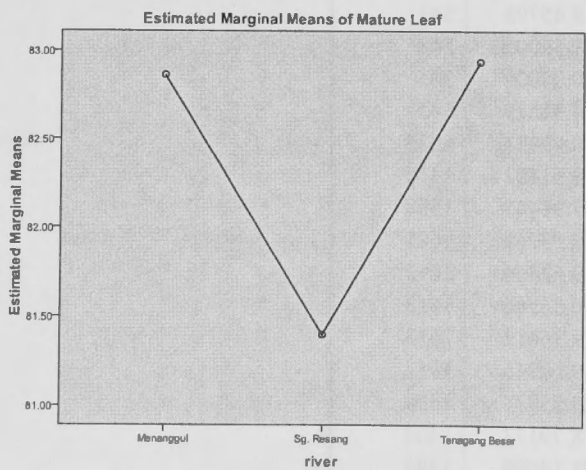


Figure 8 Multivariate General Linear Model river effects on mature leaf

Table 10 The mean young leaf production from all plots on the river over months for the three focal rivers.

rivercod	month	Mean	Std. Deviation	Count	
Menanggul	Jan	11.0452	8.61125	708	
	Feb	15.3828	13.00512	862	
	Mar	10.0698	13.26596	859	
	Apr	8.9954	10.55818	866	
	May	5.3522	11.62107	866	
	Jun	6.9515	12.31344	866	
	Jul	3.9376	9.58519	866	
	Aug	31.4665	28.03770	866	
	Sep	31.9396	18.54789	861	
	Oct	31.6880	20.21021	859	
	Nov	16.4377	10.73627	859	
	Dec	11.8503	10.77454	708	
	Total	15.5350	18.16138	10046	
Resang	Jan	11.5228	11.09862	197	
	Feb	17.2251	16.19443	191	
	Mar	13.6548	19.16211	197	
	Apr	11.7172	14.98157	198	
	May	8.6869	13.03229	198	
	Jun	7.4747	12.07787	198	
	Jul	7.6768	16.36067	198	
	Oct	21.6751	16.52876	197	
	Nov	18.9340	14.82485	197	
	Dec	12.0419	11.67626	191	
	Total	13.0428	15.46713	1962	
	Tenagang Besar	Jan	15.6098	11.52202	410
		Feb	20.2936	17.07213	545
Mar		12.7982	12.89507	545	
Apr		11.9308	13.95727	549	
May		7.8871	12.81173	549	
Jun		6.1020	10.82865	549	
Jul		4.7723	10.61060	549	
Aug		27.5746	20.60947	543	
Sep		23.9411	15.82691	543	
Oct		22.6519	12.74076	543	
Nov		20.9756	10.05009	205	
Dec		12.2099	9.06598	543	
Total		15.2294	15.55558	6073	
Total	Jan	12.5399	10.19284	1315	
	Feb	17.2778	15.05695	1598	
	Mar	11.4397	14.07583	1601	
	Apr	10.3286	12.47145	1613	
	May	6.6243	12.28650	1613	
	Jun	6.7266	11.80162	1613	
	Jul	4.6807	11.03121	1613	
	Aug	29.9666	25.49590	1409	
	Sep	28.8462	17.96748	1404	
	Oct	27.3859	18.15096	1599	
	Nov	17.5654	11.49278	1261	
	Dec	12.0111	10.28962	1442	
	Total	15.1619	17.05965	18081	

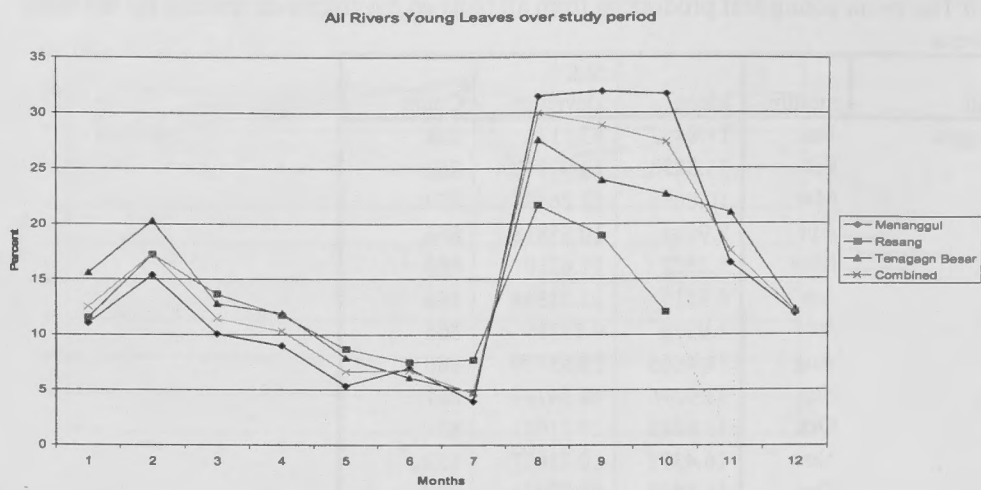


Figure 9 Frequency of young leaf production by river over the study. Data for the study starts actually starts at month 8 continues to 12 then 1-7. Main recorder changed in month 11. Thus data from 8, 9, and 10 may be in question.

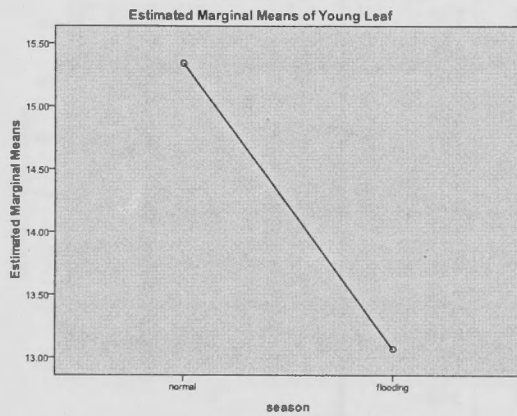


Figure 10 Multivariate General Linear Model season effects on young leaf

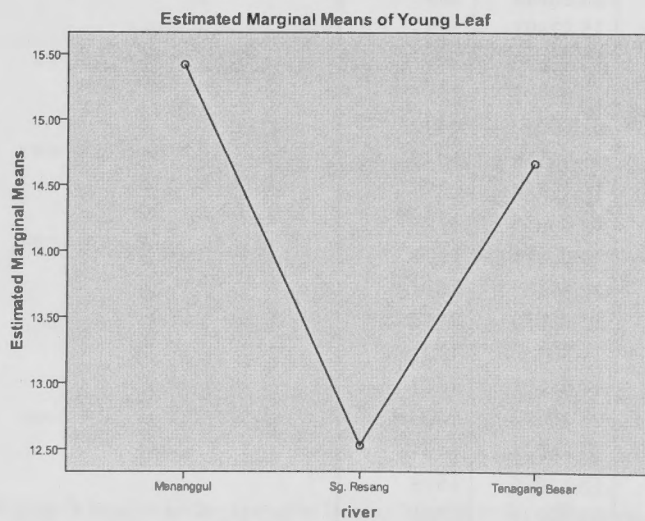


Figure 11 Multivariate General Linear Model river effects on young leaf

Table 11 The Mean unripe fruit production from all plots on the river over months for the three focal rivers.

rivercod	month	Mean	Std. Deviation	Count	
Menanggul	Jan	.5932	5.91678	708	
	Feb	.6381	5.55294	862	
	Mar	.3143	3.71087	859	
	Apr	.0808	1.82922	866	
	May	.4873	4.76601	866	
	Jun	.8845	6.04401	866	
	Jul	1.8187	8.17161	866	
	Aug	.4388	4.25125	866	
	Sep	1.3705	10.22894	861	
	Oct	1.1176	8.39907	859	
	Nov	.7742	6.52324	859	
	Dec	1.1229	6.79382	708	
	Total	.8016	6.40860	10046	
Resang	Jan	.7614	4.62126	197	
	Feb	1.5183	9.85679	191	
	Mar	1.3198	9.10731	197	
	Apr	.4040	4.13459	198	
	May	.6061	6.01490	198	
	Jun	.9091	5.62643	198	
	Jul	3.0404	12.16921	198	
	Oct	2.3858	13.01073	197	
	Nov	1.2690	7.62071	197	
	Dec	.6806	3.84675	191	
	Total	1.2905	8.24894	1962	
	Tenagang Besar	Jan	.4634	3.28438	410
		Feb	.1101	1.60043	545
Mar		.3303	4.72411	545	
Apr		.2004	3.34401	549	
May		.0911	1.75894	549	
Jun		3.0164	10.29500	549	
Jul		3.1330	11.41545	549	
Aug		2.3573	12.72638	543	
Sep		1.1050	8.54087	543	
Oct		2.2099	12.19068	543	
Nov		1.4146	9.31206	205	
Dec		.8490	4.29743	543	
Total		1.2839	8.10135	6073	
Total	Jan	.5779	5.03872	1315	
	Feb	.5632	5.40722	1598	
	Mar	.4435	5.02401	1601	
	Apr	.1612	2.77441	1613	
	May	.3670	4.20746	1613	
	Jun	1.6131	7.77932	1613	
	Jul	2.4160	9.93196	1613	
	Aug	1.1781	8.62098	1409	
	Sep	1.2678	9.60901	1404	
	Oct	1.6448	10.45804	1599	
	Nov	.9556	7.21955	1261	
	Dec	.9612	5.61881	1442	
	Total	1.0166	7.23174	18081	

All Rivers Unripe Fruit over study period

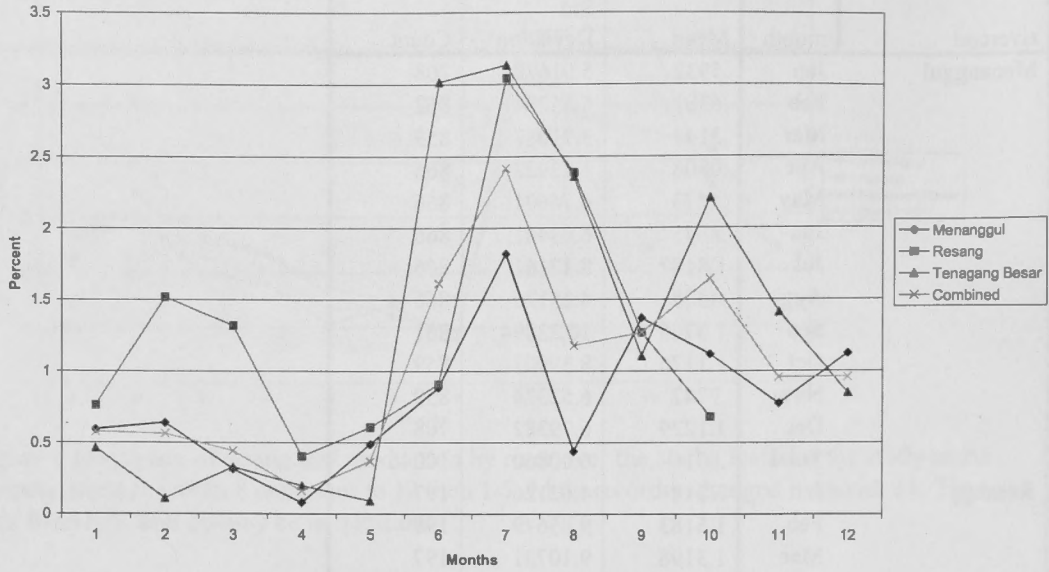


Figure 12 Frequency of unripe fruit production by river over the study. Data for the study actually starts at month 8, continues to 12, then 1-7. Main recorder changed in month 11. Thus data from 8, 9, and 10 may be in question.

All Rivers Ripe Fruit over study period

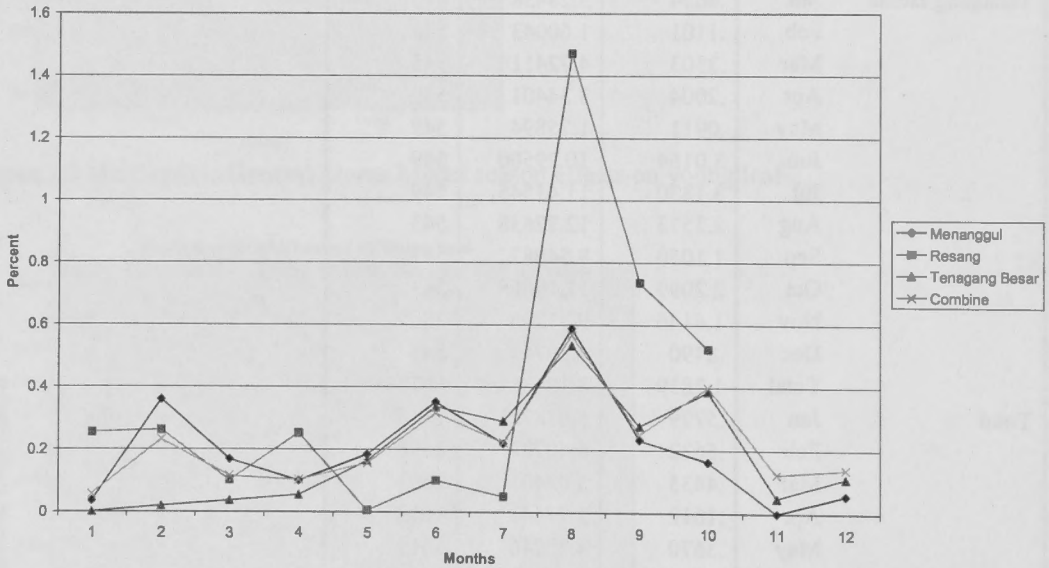


Figure 13 Frequency of ripe fruit production by river over the study. Data for the study actually starts at month 8, continues to 12, then 1-7. Main recorder changed in month 11. Thus data from 8, 9, and 10 may be in question.

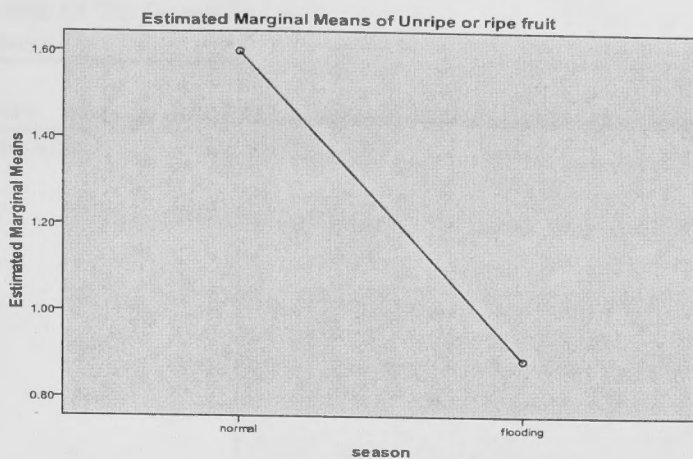


Figure 14 Multivariate General Linear Model season effects on Fruit production

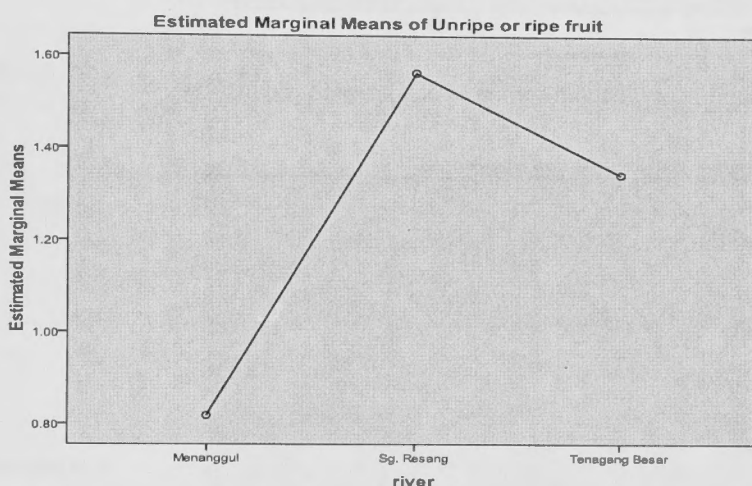


Figure 15 Multivariate General Linear Model river effects on fruit production

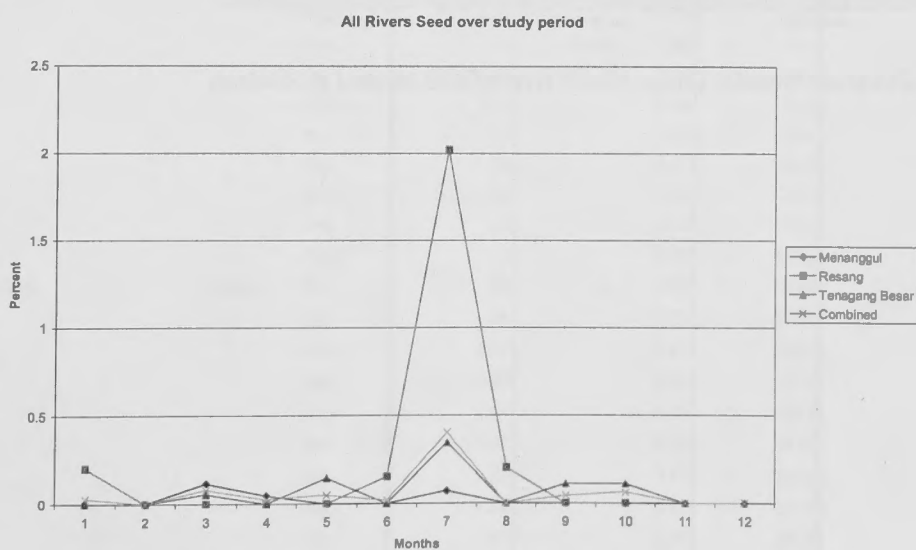


Figure 16 Frequency of seed production by river over the study. Data for the study actually starts at month 8, continues to 12, then 1-7. Main recorder changed in month 11. Thus data from 8, 9, and 10 may be in question.

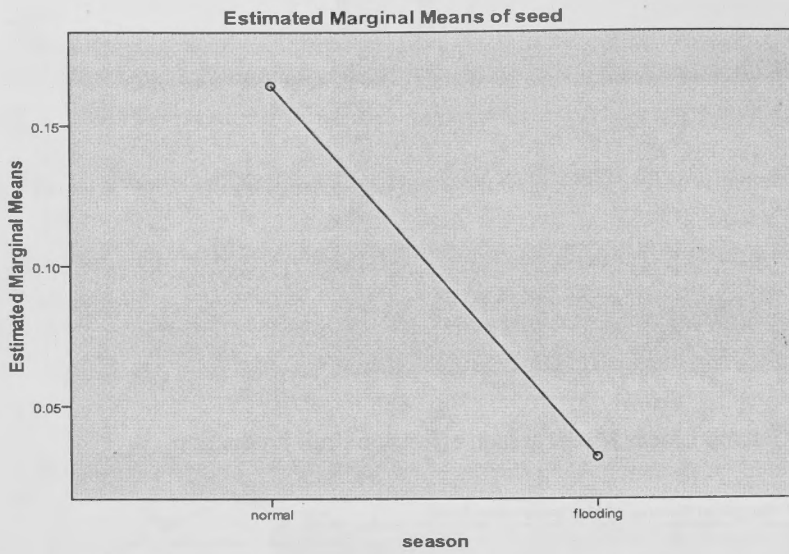


Figure 17 Multivariate General Linear Model season effects on seed production

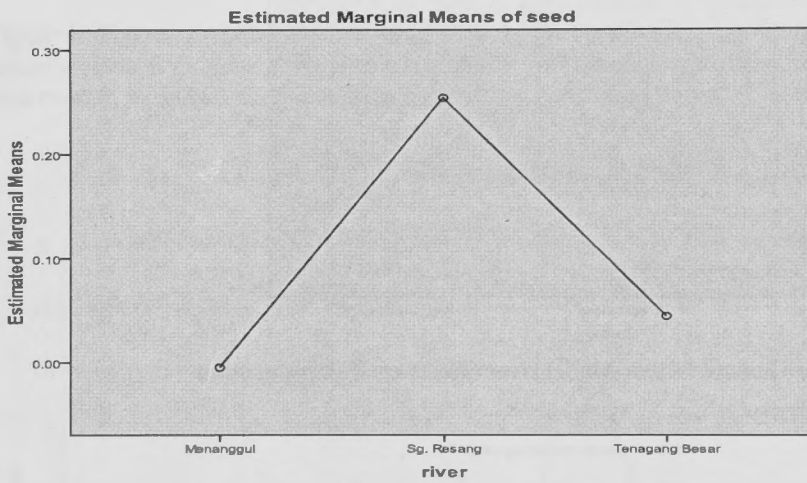


Figure 18 Multivariate General Linear Model river effects on seed production

Table 12 The Flower bud production from all plots on the river over months for the three focal rivers.

River			fbcode		
			Mean	Standard Deviation	Count
Menanggul	Month	Jan	.08	.92	708
		Feb	.01	.34	862
		Mar	.48	5.01	859
		Apr	.72	4.56	866
		May	.84	6.31	866
		Jun	1.31	6.26	866
		Jul	.83	5.23	866
		Aug	.20	1.69	866
		Sep	.19	1.86	861
		Oct	.02	.68	859
		Nov	.26	3.79	859
		Dec	.16	1.55	708
			Total	.43	3.91
Resang	Month	Jan	.00	.00	197
		Feb	.52	4.44	191
		Mar	.71	6.89	197
		Apr	2.02	7.47	198
		May	1.87	8.84	198
		Jun	1.74	8.50	198
		Jul	1.01	6.04	198
		Aug	.	.	0
		Sep	.	.	0
		Oct	.00	.00	197
		Nov	.41	5.70	197
		Dec	.00	.00	191
			Total	.83	5.90
Tenagang Besar	Month	Jan	.20	1.38	410
		Feb	.06	1.29	545
		Mar	2.07	8.82	545
		Apr	1.35	7.27	549
		May	2.81	10.24	549
		Jun	.30	2.95	549
		Jul	.41	3.40	549
		Aug	1.34	9.16	543
		Sep	.13	3.00	543
		Oct	.15	2.71	543
		Nov	.00	.00	205
		Dec	.41	2.24	543
			Total	.83	5.79
Total	Month	Jan	.11	1.03	1315
		Feb	.09	1.73	1598
		Mar	1.05	6.80	1601
		Apr	1.09	6.02	1613
		May	1.64	8.21	1613
		Jun	1.02	5.75	1613
		Jul	.71	4.81	1613
		Aug	.64	5.86	1409
		Sep	.16	2.37	1404
		Oct	.06	1.66	1599
		Nov	.24	3.86	1261
		Dec	.23	1.76	1442
			Total	.61	4.86



Table 13 The Flower production from all plots on the river over months for the three focal rivers

River	Month		fcode		
			Mean	Standard Deviation	Count
Menanggul	Month	Jan	1.03	9.42	708
		Feb	.35	4.97	862
		Mar	1.76	10.21	859
		Apr	.74	5.23	866
		May	.67	5.67	866
		Jun	.80	4.95	866
		Jul	.07	1.14	866
		Aug	.42	5.80	866
		Sep	.60	7.32	861
		Oct	.91	9.39	859
		Nov	.63	6.55	859
		Dec	.56	6.68	708
			Total	.71	6.83
Resang	Month	Jan	.00	.00	197
		Feb	1.47	10.71	191
		Mar	4.37	15.23	197
		Apr	3.54	14.31	198
		May	4.60	15.67	198
		Jun	2.68	11.42	198
		Jul	.20	2.00	198
		Aug	.	.	0
		Sep	.	.	0
		Oct	.00	.00	197
		Nov	.43	4.51	197
		Dec	.05	.72	191
			Total	1.74	9.92
Tenagang Besar	Month	Jan	.44	5.12	410
		Feb	.55	6.81	545
		Mar	4.49	15.44	545
		Apr	1.80	7.91	549
		May	1.21	7.37	549
		Jun	.54	3.75	549
		Jul	.41	4.51	549
		Aug	.29	3.08	543
		Sep	.44	5.28	543
		Oct	.35	4.87	543
		Nov	.93	7.90	205
		Dec	.28	1.64	543
			Total	.99	7.08
Total	Month	Jan	.69	7.49	1315
		Feb	.55	6.55	1598
		Mar	3.01	12.93	1601
		Apr	1.45	7.86	1613
		May	1.33	8.20	1613
		Jun	.94	5.86	1613
		Jul	.20	2.85	1613
		Aug	.37	4.93	1409
		Sep	.54	6.60	1404
		Oct	.61	7.45	1599
		Nov	.65	6.52	1261
		Dec	.39	4.80	1442
			Total	.92	7.31

Table 14 The Flower combined production from all plots on the river over months for the three focal rivers.

River			Flower combined		
			Mean	Standard Deviation	Count
Menanggul	Month	Jan	1.12	9.55	708
		Feb	.36	5.01	862
		Mar	2.24	11.47	859
		Apr	1.47	7.63	866
		May	1.51	8.79	866
		Jun	2.11	9.00	866
		Jul	.89	5.38	866
		Aug	.62	6.10	866
		Sep	.79	7.54	861
		Oct	.93	9.41	859
		Nov	.88	7.96	859
		Dec	.73	7.05	708
			Total	1.14	8.11
Resang	Month	Jan	.00	.00	197
		Feb	1.99	11.93	191
		Mar	5.08	16.95	197
		Apr	5.56	16.54	198
		May	6.46	17.89	198
		Jun	4.42	17.26	198
		Jul	1.21	7.23	198
		Aug	.	.	0
		Sep	.	.	0
		Oct	.00	.00	197
		Nov	.84	8.30	197
		Dec	.05	.72	191
			Total	2.57	12.25
Tenagang Besar	Month	Jan	.63	5.65	410
		Feb	.61	6.93	545
		Mar	6.56	18.97	545
		Apr	3.15	11.35	549
		May	4.01	13.44	549
		Jun	.84	5.51	549
		Jul	.82	6.09	549
		Aug	1.64	10.68	543
		Sep	.57	6.47	543
		Oct	.50	5.69	543
		Nov	.93	7.90	205
		Dec	.68	3.61	543
			Total	1.82	9.81
Total	Month	Jan	.80	7.69	1315
		Feb	.64	6.86	1598
		Mar	4.06	15.24	1601
		Apr	2.54	10.51	1613
		May	2.97	12.04	1613
		Jun	1.96	9.56	1613
		Jul	.91	5.88	1613
		Aug	1.01	8.19	1409
		Sep	.71	7.14	1404
		Oct	.67	7.66	1599
		Nov	.88	7.99	1261
		Dec	.62	5.42	1442
			Total	1.52	9.24

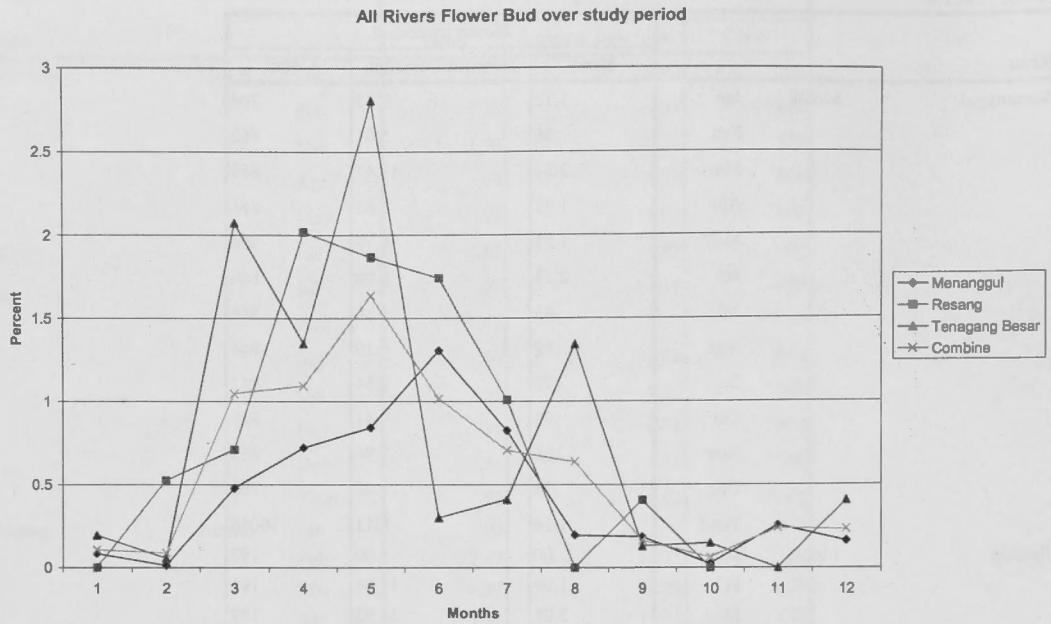


Figure 19 Frequency of flower bud production by river over the study. Data for the study actually starts at month 8, continues to 12, then 1-7. Main recorder changed in month 11. Thus data from 8, 9, and 10 may be in question.

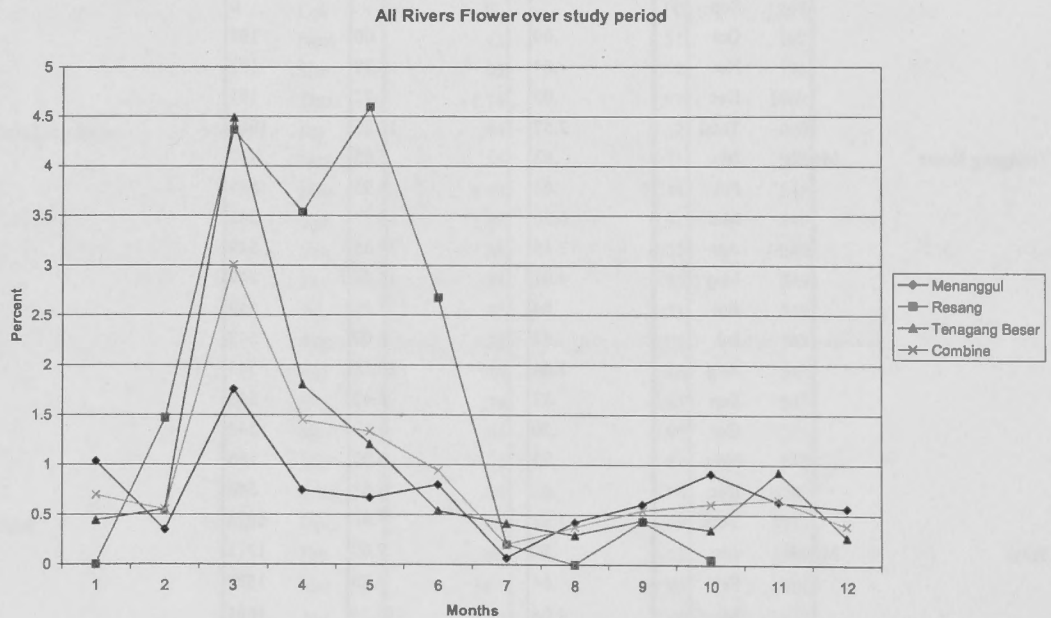


Figure 20 Frequency of flower production by river over the study. Data for the study actually starts at month 8, continues to 12, then 1-7. Main recorder changed in month 11. Thus data from 8, 9, and 10 may be in question.

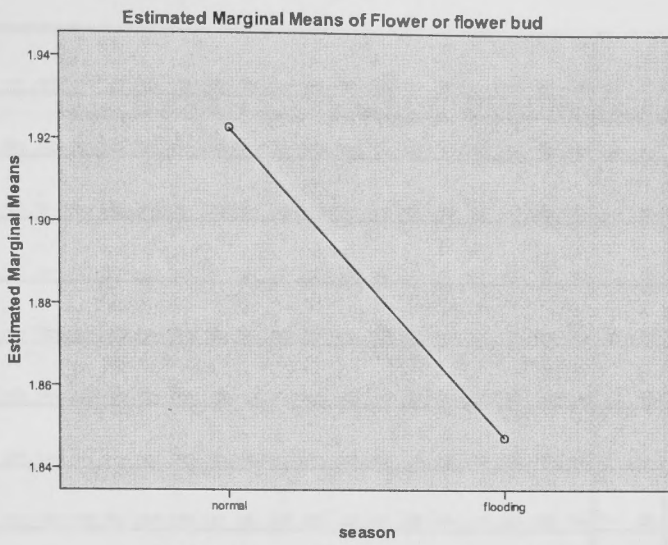


Figure 21 Multivariate General Linear Model season effects on flower production

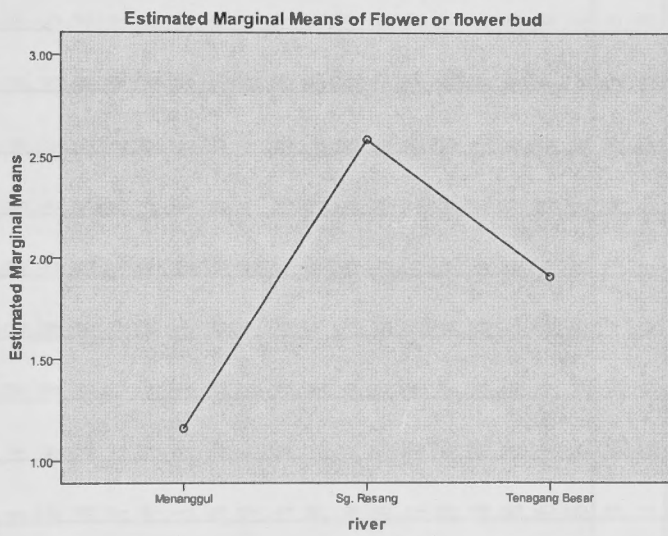


Figure 22 Multivariate General Linear Model river effects on flower production

## Quadrat composition

### Menanggul

Table 15 Count of trees in the same Family for all quadrat on the Menanggul.

Quad Number																										
Family	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	
	0	1	1	0	1	1	0	2	0	0	0	1	1	2	0	0	2	0	1	1	0	0	0	1	0	
Anacardiaceae	0	1	1	2	0	0	0	2	0	0	1	2	5	11	2	3	4	1	1	0	0	0	1	1	2	
Annonaceae	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	1	0	0	0	0		
Apocynaceae	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Aquifoliaceae	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0	0	1	3	
Bombacaceae	0	0	0	0	0	0	0	5	0	0	0	2	0	1	0	0	5	0	0	0	0	0	0	0		
Burseraceae	0	0	0	0	0	0	0	3	0	1	0	0	3	0	0	1	2	1	0	0	0	0	0	0		
Chrysobalanaceae	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0		
Ctenolophonaceae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0		
Dilleniaceae	20	0	0	0	0	0	5	0	4	0	1	0	0	0	0	0	0	0	0	0	3	6	7	4	4	
Dipterocarpaceae	0	0	0	1	0	2	1	1	0	1	1	1	2	4	1	4	0	0	1	0	4	0	0	0	1	
Ebenaceae	0	2	1	3	1	3	0	2	0	2	0	1	4	2	3	1	1	3	0	0	0	0	0	0	2	
Elaeocarpaceae	2	1	1	1	1	1	0	1	0	0	1	0	1	1	0	1	1	1	0	0	1	0	2	2	0	
Erythroxylaceae	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
Euphorbiaceae	5	6	4	5	7	13	8	7	8	2	10	12	8	7	2	4	9	9	7	4	7	8	4	12	4	
Flacourtiaceae	3	4	3	1	0	3	4	1	3	3	0	2	3	4	4	1	6	2	5	2	1	2	3	1	0	
Guttiferae	0	1	1	0	0	1	0	1	2	0	0	1	2	1	1	2	1	1	1	2	0	2	0	0	0	
Hypericaceae	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	2	0	2	1	2	0	0	2	1	3	
Lauraceae	0	2	1	5	2	3	1	0	2	2	2	0	0	5	2	2	2	4	1	1	0	1	1	0	2	
Lecythidaceae	0	0	0	0	0	2	0	1	1	1	0	0	0	0	0	1	0	0	3	0	1	0	0	0	1	
Leguminosae	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Leguminosae	0	1	1	0	0	1	0	1	0	0	0	0	4	1	0	1	1	1	0	0	0	0	0	0	0	

Melastomataceae	1	0	2	0	4	1	0	0	3	1	2	0	0	0	0	3	1	3	1	1	3	4	11	7	
Meliaceae	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Moraceae	0	0	0	0	1	1	0	1	0	0	0	0	1	2	2	1	0	0	1	2	1	1	0	1	
Myristicaceae	0	0	2	1	0	1	0	2	0	0	0	0	1	2	1	2	2	0	0	0	0	0	0	1	
Myrsinaceae	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	
Myrtaceae	1	2	1	0	2	2	0	2	1	0	1	0	5	2	3	4	5	3	1	1	0	0	5	4	7
Ochnaceae	0	0	0	1	0	0	0	0	0	0	0	2	3	0	1	0	2	5	0	0	0	0	0	0	
Oleaceae	0	0	0	0	0	2	0	1	0	1	0	0	1	0	0	0	0	2	0	0	0	0	0	0	
Polygalaceae	0	0	0	1	0	0	0	0	1	2	1	0	1	0	1	0	4	2	1	1	0	0	0	0	
Proteaceae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	
Rubiaceae	3	1	0	1	1	4	2	1	1	1	1	0	0	0	2	0	0	2	1	0	1	2	2	1	
S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
Sapindaceae	0	0	0	1	0	1	0	1	0	1	0	1	2	2	0	1	0	0	0	1	0	0	0	0	
Sapotaceae	0	2	0	1	0	0	0	2	2	1	1	1	0	0	0	0	1	1	0	1	0	0	3	0	
Saxifragaceae	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sterculiaceae	0	0	1	0	0	2	2	0	1	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	
Symplocaceae	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
Theaceae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	
Tiliaceae	0	2	1	4	2	0	1	1	1	2	2	1	0	0	0	0	0	0	3	0	0	0	0	1	
Verbenaceae	1	1	1	0	0	1	5	0	0	0	1	0	1	1	2	2	1	3	1	3	1	5	4	1	

Table 16 Quadrat make up by family, genus and species on Menanggul.

Quad #	Family	Genus	Species	Count	
Q1	Dilleniaceae	Dillenia	excelsa	20	
	Elaeocarpaceae	Elaeocarpus	spc.	2	
	Euphorbiaceae	Excoecaria	indica	4	
		Mallotus	muticus	1	
	Flacourtiaceae	Flacourtia	spc.	3	
	Melastomataceae	Pternandra	spc.	1	
	Myrtaceae	Eugenia	spc.	1	
	Rubiaceae	Gardenia	tubifera	1	
		Nauclea	spc.	2	
	Verbenaceae	Vitex	pinnata	1	
Q2	Anacardiaceae	Buchanania	arborescens	1	
	Ebenaceae	Diospyros	elliptifolia	1	
			spc.	1	
	Elaeocarpaceae	Elaeocarpus	spc.	1	
	Euphorbiaceae	Antidesma	spc.	1	
		Aporusa	spc.	1	
		Excoecaria	indica	2	
		Mallotus	spc.	1	
		Paracorton	pendulus	1	
	Flacourtiaceae	Hydnocarpus	borneensis	3	
			polypetala	1	
	Guttiferae	Garcinia	spc.	1	
	Lauraceae	Cryptocarya	spc.	1	
		Endiandra	spc.	1	
	Leguminosae	Spatholobus	sp	1	
	Leguminosae	Sindora	spc.	1	
	Myrtaceae	Eugenia	spc.	2	
	Rubiaceae	Gardenia	tubifera	1	
	Sapotaceae	Madhuca	spc.	2	
	Tiliaceae	Colona	serritifolia	1	
		Microcos	crassifolia	1	
	Verbenaceae	Vitex	pinnata	1	
	Q3	Anacardiaceae	Melanochyla	spc.	1
		Ebenaceae	Diospyros	spc.	1
		Elaeocarpaceae	Elaeocarpus	spc.	1
		Euphorbiaceae	Aporusa	spc.	1
			Bridelia	penangiana	1
Croton			oblongus	2	
Flacourtiaceae		Flacourtia	spc.	3	
Guttiferae		Garcinia	parvifolia	1	
Hypericaceae		Cratoxylum	spc.	1	
Lauraceae		Dehassia	incrassata	1	
Leguminosae		Koompassia	excelsa	1	
Melastomataceae		Pternandra		1	
			spc.	1	

	Myristicaceae	Knema		2
	Myrtaceae	Eugenia		1
	Sterculiaceae	Heritiera	spc.	1
	Tiliaceae	Microcos	crassifolia	1
	Verbenaceae	Vitex	pinnata	1
Q4	Anacardiaceae	Melanochyla	auriculata	2
	Dipterocarpaceae	Hopea	nervosa	1
	Ebenaceae	Diospyros	elliptifolia	2
			spc.	1
	Elaeocarpaceae	Elaeocarpus	stipularis	1
	Euphorbiaceae	Aporusa	spc.	1
		Croton	oblongus	1
		Excoecaria	indica	3
	Flacourtiaceae	Hydnocarpus	borneensis	1
	Lauraceae	Cryptocarya	spc.	2
		Endiandra	spc.	3
	Meliaceae	Dysoxylum	spc.	1
	Myristicaceae	Knema		1
	Ochnaceae	Gomphia	serrata	1
	Polygalaceae	Xanthophyllum	spc.	1
	Rubiaceae			1
	Sapindaceae	Mischrocerpus	spc.	1
	Sapotaceae	Madhuca	spc.	1
	Symplocaceae	Symplocos	fasciculata	1
	Tiliaceae	Colona	serritifolia	1
		Microcos	crassifolia	1
			microfolia	2
Q5				1
	Ebenaceae	Diospyros	spc.	1
	Elaeocarpaceae	Elaeocarpus	spc.	1
	Euphorbiaceae	Aporusa	spc.	1
		Baccaurea	stipulata	1
		Croton	oblongus	3
		Excoecaria	indica	1
		Mallotus	spc.	1
	Lauraceae	Cryptocarya	spc.	2
	Melastomataceae	Memecylon	beccarianum	1
			spc.	2
		Ptemandra	spc.	1
	Moraceae	Ficus	spc.	1
	Myrtaceae	Eugenia	spc.	2
	Rubiaceae	Nauclea	spc.	1
	Tiliaceae	Microcos	crassifolia	1
			microfolia	1
Q6				1
	Dipterocarpaceae	Dipterocarpus	validus	1
		Vatica	rassak	1
	Ebenaceae	Diospyros	spc.	3
	Elaeocarpaceae	Elaeocarpus	spc.	1
	Euphorbiaceae	Aporusa	acuminatissima	1
			spc.	6
		Bridelia	penangiana	1



		Cleistanthus	sp.	1
		Mallotus	sp.	1
		Paracorton	pendulus	2
			sp.	1
	Flacourtiaceae	Hydnocarpus	borneensis	1
			polypetala	2
	Guttiferae	Mesua	macrantha	1
	Lauraceae	Cryptocarya	sp.	2
		Endiandra	sp.	1
	Lecythidaceae	Barringtonia	sp.	1
		Planchonia	valida	1
	Leguminosae	Parkia	sp.	1
	Melastomataceae	Memecylon	beccarianum	1
	Moraceae	Prainea	limpato	1
	Myristicaceae	Knema	sp.	1
	Myrsinaceae	Ardisia	sp.	1
	Myrtaceae	Eugenia	sp.	2
	Oleaceae	Chionanthus	sp.	2
	Rubiaceae			1
		Nauclea	sp.	1
		Pleiocarpidia	sandakanica	2
	Sapindaceae	Mischorcerpus	sp.	1
	Sterculiaceae	Heritiera	elmeri	1
		Pterospermum	diversifolium	1
	Verbenaceae	Vitex	pinnata	1
Q7	Dilleniaceae	Dillenia		2
			excelsa	3
	Dipterocarpaceae	Vatica	sp.	1
	Euphorbiaceae	Cleistanthus	myaranthus	1
		Excoecaria	indica	1
		Excoecaria	indica	1
		Mallotus	muticus	4
			sp.	1
	Flacourtiaceae	Flacourtia	sp.	3
		Hydnocarpus	borneensis	1
	Lauraceae	Cinnamomum	sp.	1
	Rubiaceae	Nauclea	sp.	2
	Sterculiaceae	Pterospermum	diversifolium	2
	Tiliaceae	Microcos	crassifolia	1
	Verbenaceae	Vitex	pinnata	5
Q8				2
	Anacardiaceae	Androtrium	astylum	2
	Bombacaceae	Durio	acutifolius	1
			grandiflorus	3
			kutejensis	1
	Burseraceae	Canarium	sp.	3
	Chrysobalanaceae	Maranthes	corymbosa	1
	Dipterocarpaceae	Dipterocarpus	validus	1
	Ebenaceae	Diospyros	sp.	2
	Elaeocarpaceae	Elaeocarpus	sp.	1
	Erythroxylaceae	Erythroxylum	cuneatum	2
	Euphorbiaceae	Aporusa	acuminatissima	2

		spc.	2
	Paracorton	pendulus	3
Flacourtiaceae	Hydnocarpus	borneensis	1
Guttiferae	Garcinia	spc.	1
Lecythidaceae	Barringtonia	spc.	1
Leguminosae	Dialium	indum	1
Meliaceae	Walsura	pinnata	1
Moraceae	Artocarpus	elasticus	1
Myristicaceae	Knema	spc.	2
Myrtaceae	Eugenia	spc.	2
Oleaceae	Chionanthus	spc.	1
Rubiaceae			1
Sapindaceae	Nephelium	rambutanake	1
Sapotaceae	Madhuca	spc.	2
Saxifragaceae	Polyosma	spc.	1
Tiliaceae	Microcos	crassifolia	1
Q9 Dilleniaceae	Dillenia	excelsa	4
Euphorbiaceae	Aporusa	spc.	3
	Baccaurea	stipulata	2
	Croton	oblongus	2
	Exoecaria	indica	1
Flacourtiaceae	Flacourtia	spc.	1
	Hydnocarpus	borneensis	2
Guttiferae	Garcinia	spc.	1
	Mesua	elmeri	1
Lauraceae	Dehassia	spc.	1
	Litsea	spc.	1
Lecythidaceae	Barringtonia	spc.	1
Melastomataceae	Memecylon	beccarianum	1
	Pternandra	coerulescens	2
Myrtaceae	Eugenia	spc.	1
Polygalaceae	Xanthophyllum	spc.	1
Rubiaceae	Pleiocarpidia	spc.	1
Sapotaceae	Madhuca	spc.	2
Sterculiaceae	Pterospermum	diversifolium	1
Tiliaceae	Microcos	crassifolia	1
Q10 Apocynaceae	Kibatalia	spc.	1
Burseraceae	Canarium	spc.	1
Chrysobalanaceae	Maranthes	corymbosa	1
Dipterocarpaceae	Parashorea	malaanonan	1
Ebenaceae	Diospyros	spc.	2
Euphorbiaceae	Aporusa	grandistipula	1
	Paracorton	pendulus	1
Flacourtiaceae	Hydnocarpus	polypetala	1
	Ryparosa	acuminata	2
Lauraceae	Endiandra	spc.	1
	Litsea	spc.	1
Lecythidaceae	Barringtonia	spc.	1
Melastomataceae	Memecylon	beccarianum	1
Oleaceae	Chionanthus	spc.	1
Polygalaceae	Xanthophyllum	spc.	2
Rubiaceae	Pleiocarpidia	sandakanica	1

	Sapindaceae	Nephelium	spc.	1
	Sapotaceae	Madhuca	spc.	1
	Tiliaceae	Colona	serritifolia	1
		Microcos	crassifolia	1
Q11	Anacardiaceae	Buchanania	arborescens	1
	Aquifoliaceae	Ilex	spc.	3
	Chrysobalanaceae	Parinari	oblongifolia	1
	Dilleniaceae	Dillenia	excelsa	1
	Dipterocarpaceae	Vatica	rassak	1
	Elaeocarpaceae	Elaeocarpus	spc.	1
	Euphorbiaceae	Antidesma	spc.	1
		Aporusa	spc.	3
		Croton	oblongus	3
		Exoecaria	indica	2
		Paracorton	pendulus	1
	Lauraceae	Endiandra	spc.	2
	Melastomataceae	Pternandra	spc.	2
	Myrtaceae	Eugenia	spc.	1
	Polygalaceae	Xanthophyllum	spc.	1
	Rubiaceae	Nauclea	spc.	1
	Sapotaceae	Palaquium	spc.	1
	Sterculiaceae	Pterospermum	diversifolium	1
	Tiliaceae	Colona	serritifolia	1
		Microcos	crassifolia	1
	Verbenaceae	Vitex	pinnata	1
Q12				1
	Anacardiaceae	Buchanania	arborescens	1
		Gluta	wallichii	1
	Bombacaceae	Durio	acutifolius	1
			grandiflorus	1
	Dipterocarpaceae	Dipterocarpus	validus	1
	Ebenaceae	Diospyros	spc.	1
	Euphorbiaceae	Aporusa	acuminatissima	2
		Bridelia	penangiana	1
		Croton	oblongus	5
		Macaranga	cauniferia	1
		Paracorton	pendulus	3
	Flacourtiaceae	Flacourtia	spc.	1
		Hydnocarpus	polypetala	1
	Guttiferae	Garcinia	spc.	1
	Ochnaceae	Gomphia	serrata	2
	Sapindaceae	Dimocarpus	longan	1
	Sapotaceae	Madhuca	spc.	1
	Tiliaceae	Microcos	crassifolia	1
Q14		Scleropypum	watlichianum	1
	Anacardiaceae	Androtrium	astylum	1
		Buchanania	arborescens	2
		Melanochyla	auriculata	1
			beccariana	1
	Annonaceae	Oncodostigma	meomosperma	1
	Burseraceae	Canarium	spc.	3
	Dipterocarpaceae	Hopea	nervosa	2

Ebenaceae	Diospyros	elliptifolia	1
		spc.	3
Elaeocarpaceae	Elaeocarpus	spc.	1
Euphorbiaceae	Aporusa	acuminatissima	1
	Croton	oblongus	2
	Glochidion	spc.	2
	Macaranga	conifera	3
Flacourtiaceae	Flacourtia	spc.	1
	Hydnocarpus	borneensis	1
		polypetala	1
Guttiferae	Garcinia	rostrata	2
Leguminosae	Dialium	indum	2
	Sindora	spc.	2
Myristicaceae	Knema	spc.	1
Myrtaceae	Eugenia	spc.	5
Ochnaceae	Gomphia	serrata	3
Oleaceae	Chionanthus	spc.	1
Polygalaceae	Xanthophyllum	spc.	1
Sapindaceae	Dimocarpus	longan	1
	Mischorcerpus	spc.	1
Verbenaceae	Vitex	pinnata	1
Q15			1
	Kibara	spc.	1
Anacardiaceae			1
	Androtrium	astylum	2
	Buchanania	arborescens	3
	Dracontomelon	doa	1
	Melanochyla	auriculata	3
		beccariana	1
Bombacaceae	Durio	acutifolius	1
Dipterocarpaceae	Hopea	nervosa	4
Ebenaceae	Diospyros	spc.	2
Elaeocarpaceae	Elaeocarpus	stipularis	1
Euphorbiaceae	Aporusa	acuminatissima	1
		spc.	2
	Bridelia	penangiana	1
	Glochidion	spc.	1
	Macaranga	conifera	2
Flacourtiaceae	Flacourtia	spc.	1
	Hydnocarpus	borneensis	1
		polypetala	2
Guttiferae	Garcinia	rostrata	1
Hypericaceae	Cratoxylum	spc.	2
Lauraceae	Cryptocarya	spc.	1
	Dehassia	spc.	1
	Endiandra	spc.	2
	Litsea	spc.	1
Leguminosae	Sindora	spc.	1
Moraceae	Artocarpus	kemandu	1
Myristicaceae	Knema	spc.	2
Myrsinaceae	Ardisia	spc.	1
Myrtaceae	Eugenia	spc.	2

	s	Scleropypum	watlichianum	1
	Sapindaceae	Dimocarpus	longan	1
		Mischorcerpus	spc.	1
	Verbenaceae	Teijsmanniodes	spc.	1
Q16	Anacardiaceae	Buchanania	arborescens	2
	Chrysobalanaceae	Licania	splendens	1
	Ctenolophonaceae	Ctenolophon	parvifolius	1
	Dipterocarpaceae	Hopea	nervosa	1
	Ebenaceae	Diospyros	elliptifolia	2
			spc.	1
	Erythroxylaceae	Erythroxylum	cuneatum	1
	Euphorbiaceae	Aporusa	acuminatissima	1
		Macaranga	conifera	1
	Flacourtiaceae	Hydnocarpus	borneensis	1
			polypetala	1
			woodii	2
	Guttiferae	Mesua	spc.	1
	Lauraceae	Cryptocarya	spc.	1
		Dehassia	spc.	1
	Moraceae	Artocarpus	kemando	2
	Myristicaceae	Knema	spc.	1
	Myrtaceae	Eugenia	spc.	3
	Ochnaceae	Gomphia	serrata	1
	Polygalaceae	Xanthophyllum	spc.	1
	Proteaceae	Helicia	spc.	1
	Rubiaceae	Gardenia	tubifera	1
		Nauclea	spc.	1
	Verbenaceae	Vitex	pinnata	2
Q17	Anacardiaceae	Androtrium	astylum	1
		Gluta	spc.	1
		Melanochyla	beccariana	1
	Annonaceae	Cananga	ordorata	1
	Burseraceae	Dacryodes	rostrata	1
	Dipterocarpaceae	Hopea	nervosa	2
			sangal	2
	Ebenaceae	Diospyros	spc.	1
	Elaeocarpaceae	Elaeocarpus	spc.	1
	Euphorbiaceae	Aporusa	acuminatissima	1
		Bridelia	penangiana	1
		Macaranga	gigantea	1
		Paracorton	pendulus	1
	Flacourtiaceae	Hydnocarpus	borneensis	1
	Guttiferae	Garcinia	spc.	1
		Mesua	elmeri	1
	Hypericaceae	Cratoxylum	spc.	2
	Lauraceae	Cryptocarya	spc.	1
		Dehassia	spc.	1
	Lecythidaceae	Barringtonia	spc.	1
	Leguminosae	Sindora	spc.	1
	Moraceae	Artocarpus	elasticus	1
			kemando	1
	Myristicaceae	Knema	spc.	2

	Myrtaceae	Eugenia	spc.	4
	Proteaceae	Helicia	spc.	1
	Sapindaceae	Nephelium	spc.	1
	Theaceae	Ternstroemia	spc.	1
	Verbenaceae	Teijsmanniodes	spc.	1
		Vitex	pinnata	1
Q18				1
	Anacardiaceae	Kibara	spc.	1
		Gluta	wallichii	1
		Melanochyla	auriculata	1
			beccariana	2
	Annonaceae	Oncodostigma	meomosperma	1
	Bombacaceae	Durio	acutifolius	4
			grandiflorus	1
	Burseraceae	Canarium	denticulatum	2
	Ctenolophonaceae	Ctenolophon	parvifolius	1
	Ebenaceae	Diospyros	elliptifolia	1
	Elaeocarpaceae	Elaeocarpus	spc.	1
	Euphorbiaceae	Aporusa	acuminatissima	1
			spc.	1
		Bridelia	penangiana	1
		Croton	oblongus	2
		Macaranga	conifera	1
		Paracorton	pendulus	3
	Flacourtiaceae	Flacourtia	rukam	1
			spc.	1
		Hydnocarpus	borneensis	2
			woodii	2
	Guttiferae	Mesua	elmeri	1
	Lauraceae	Cryptocarya	spc.	2
	Leguminosae	Sindora	spc.	1
	Melastomataceae	Memecylon	beccarianum	1
			spc.	2
	Moraceae	Artocarpus	kemando	1
	Myristicaceae	Knema	spc.	2
	Myrtaceae	Eugenia	spc.	5
	Ochnaceae	Gomphia	serrata	2
	Polygalaceae	Xanthophyllum	spc.	4
	Sapotaceae	Pouteria	spc.	1
	Sterculiaceae	Heritiera	elmeri	2
	Symplocaceae	Symplocos	spc.	1
	Verbenaceae	Teijsmanniodes	spc.	1
Q19	Anacardiaceae	Melanochyla	auriculata	1
	Annonaceae	Polyalthia	obliqua	1
	Burseraceae	Canarium	denticulatum	1
	Ebenaceae	Diospyros	elliptifolia	1
			spc.	2
	Elaeocarpaceae	Elaeocarpus	spc.	1
	Euphorbiaceae	Aporusa	acuminatissima	1
			spc.	3
		Croton	oblongus	1
		Paracorton	pendulus	4

	Flacourtiaceae	Flacourtia	sp.	1
		Hydnocarpus	borneensis	1
	Guttiferae	Garcinia	sp.	1
	Hypericaceae	Cratoxylum	sp.	2
	Lauraceae			1
		Cryptocarya	sp.	2
		Litsea	sp.	1
	Leguminosae	Ormosia	bancana	1
	Melastomataceae	Memecylon	sp.	1
	Myrtaceae	Eugenia	sp.	3
	Ochnaceae	Gomphia	serrata	5
	Oleaceae	Chionanthus	sp.	2
	Polygalaceae	Xanthophyllum	firma	1
			sp.	1
	Rubiaceae	Nauclea	sp.	1
		Pleiocarpidia	sandakanica	1
	Sapotaceae	Madhuca	sp.	1
	Verbenaceae	Teijsmanniodes	sp.	2
		Vitex	pinnata	1
Q20		Congcodistigm	monosperma	1
	Anacardiaceae	Androtrium	astylum	1
	Dipterocarpaceae	Dipterocarpus	validus	1
	Euphorbiaceae	Baccaurea	aborensis	1
			stipulata	1
		Excoecaria	indica	2
		Mallotus	muticus	1
			sp.	1
		Paracorton	pendulus	1
	Flacourtiaceae	Flacourtia	sp.	2
		Hydnocarpus	borneensis	3
	Guttiferae	Mesua	elmeri	1
	Hypericaceae	Cratoxylum	sp.	1
	Lauraceae	Dehassia	sp.	1
	Lecythidaceae	Barringtonia	sp.	3
	Melastomataceae	Memecylon	beccarianum	2
		Pternandra	sp.	1
	Myrsinaceae	Ardisia	sp.	1
	Myrtaceae	Eugenia	sp.	1
	Polygalaceae	Xanthophyllum	sp.	1
	Rubiaceae	Gardenia	tubifera	1
	Verbenaceae	Vitex	pinnata	1
Q21				1
	Annonaceae	Cananga	odorata	1
	Euphorbiaceae	Excoecaria	indica	1
		Macaranga	conifera	1
		Paracorton	pendulus	2
	Flacourtiaceae	Hydnocarpus	borneensis	1
			polypetala	1
	Guttiferae	Garcinia	rostrata	1
			sp.	1
	Hypericaceae	Cratoxylum	sp.	2
	Lauraceae	Cryptocarya	sp.	1

	Melastomataceae	Memecylon	beccarianum	1
	Moraceae	Ficus	spc.	1
	Myrtaceae	Eugenia	spc.	1
	Polygalaceae	Xanthophyllum	spc.	1
	Sapindaceae	Nephelium	spc.	1
	Sapotaceae	Palaquium	spc.	1
	Tiliaceae	Colona	serritifolia	2
		Microcos	crassifolia	1
	Verbenaceae	Vitex	pinnata	3
Q22	Aquifoliaceae	Ilex	cymosa	1
	Dilleniaceae	Dillenia	excelsa	3
	Dipterocarpaceae	Vatica	rassak	4
	Elaeocarpaceae	Elaeocarpus	spc.	1
	Euphorbiaceae	Antidesma	neurocarpum	1
			spc.	1
		Baccaurea	stipulata	1
		Croton	oblongus	3
		Excoecaria	indica	1
	Flacourtiaceae	Flacourtia	spc.	1
	Lecythidaceae	Barringtonia	spc.	1
	Melastomataceae	Pternandra	spc.	1
	Moraceae	Ficus	spc.	2
	Rubiaceae	Pleiocarpidia	sandakanica	1
	Verbenaceae	Vitex	pinnata	1
Q23	Dilleniaceae	Dillenia	excelsa	6
	Euphorbiaceae	Antidesma	spc.	2
		Aporusa	spc.	1
		Baccaurea	stipulata	2
		Mallotus	muticus	3
	Flacourtiaceae	Flacourtia	spc.	1
		Hydnocarpus	borneensis	1
	Guttiferae	Garcinia	spc.	2
	Lauraceae	Cryptocarya	spc.	1
	Melastomataceae	Pternandra	spc.	3
	Moraceae	Ficus	spc.	1
	Rubiaceae	Gardenia	tubifera	1
		Nauclea	spc.	1
	Verbenaceae	Vitex	pinnata	5
Q24	Anacardiaceae	Buchanania	arborescens	1
	Dilleniaceae	Dillenia	excelsa	7
	Elaeocarpaceae	Elaeocarpus	spc.	2
	Euphorbiaceae	Antidesma	spc.	3
		Croton	oblongus	1
	Flacourtiaceae	Flacourtia	spc.	3
	Hypericaceae	Cratoxylum	spc.	2
	Lauraceae	Endiandra	spc.	1
	Melastomataceae	Memecylon	beccarianum	1
		Pternandra	spc.	3
	Moraceae	Ficus	spc.	1
	Myrtaceae	Eugenia	spc.	5
	Proteaceae	Helicia	robusta	1
	Rubiaceae	Gardenia	tubifera	1



		Nauclea	spc.	1
	Theaceae			1
	Verbenaceae	Vitex	pinnata	4
Q25				1
	Anacardiaceae	Buchanania	arborescens	1
	Aquifoliaceae	Ilex	cymosa	1
	Dilleniaceae	Dillenia	excelsa	4
	Elaeocarpaceae	Elaeocarpus	spc.	2
	Euphorbiaceae	Antidesma	spc.	4
		Aporusa	spc.	1
		Croton	oblongus	7
	Flacourtiaceae	Flacourtia	spc.	1
	Hypericaceae	Cratoxylum	spc.	1
	Melastomataceae	Memecylon	beccarianum	3
			spc.	1
		Pternandra	spc.	7
	Myrtaceae	Eugenia	spc.	4
	Rubiaceae	Nauclea	spc.	2
	Sapotaceae	Madhuca	spc.	3
Q26	Anacardiaceae	Buchanania	arborescens	2
	Aquifoliaceae	Ilex	cymosa	3
	Dilleniaceae	Dillenia	excelsa	4
	Dipterocarpaceae	Vatica	spc.	1
	Ebenaceae	Diospyros	elliptifolia	2
	Euphorbiaceae	Antidesma	spc.	4
	Hypericaceae	Cratoxylum	spc.	3
	Lauraceae	Dehassia	spc.	1
		Endiandra	spc.	1
	Lecythidaceae	Barringtonia	spc.	1
	Melastomataceae	Memecylon	beccarianum	1
			spc.	1
		Pternandra	spc.	5
	Moraceae	Ficus	spc.	1
	Myristicaceae	Knema	spc.	1
	Myrtaceae	Eugenia	spc.	7
	Rubiaceae	Nauclea	spc.	1
	Tiliaceae	Microcos	crassifolia	1
	Verbenaceae	Vitex	pinnata	1

Table 17 Number of trees in each Quad on the Menanggul.

Quad #	Count
Q1	36
Q2	28
Q3	23
Q4	30
Q5	22
Q6	46
Q7	29
Q8	43
Q9	30
Q10	23
Q11	30
Q12	27
Q14	48
Q15	51
Q16	31
Q17	37
Q18	58
Q19	45
Q20	29
Q21	25
Q22	23
Q23	30
Q24	38
Q25	43
Q26	41

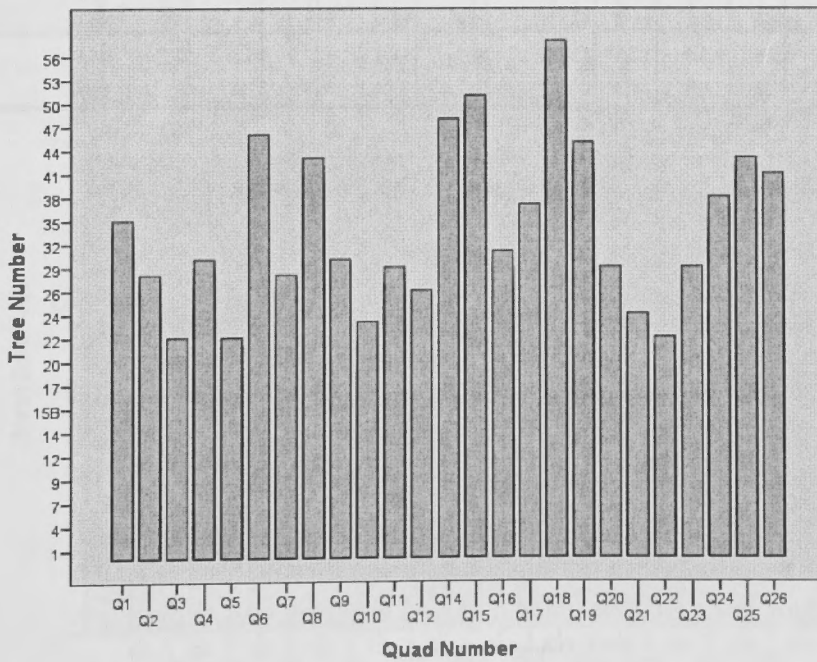


Figure 23 Bar graph of number of trees in each quadrat on the Menanggul

Table 18 Tree heights in each quadrat on the Menanggul at the start of the study and at the end of the study. Mean, maximum, minimum, mode, standard deviation and variance in within the quadrat are listed for each.

Quad #	Month											
	Start						End					
	Mean	Max	Min	Mode	STD	Variance	Mean	Max	Min	Mode	STD	Variance
Q1	.	.	.	.	.	.	12.6	20.5	7.1	10.9	3.5	12.3
Q2	.	.	.	.	.	.	11.4	16.1	7.8	9.4	2.0	4.0
Q3	.	.	.	.	.	.	10.5	16.2	7.3	9.4	1.9	3.8
Q4	.	.	.	.	.	.	10.4	19.6	6.4	8.8	2.9	8.5
Q5	.	.	.	.	.	.	11.5	18.1	6.1	13.5	2.9	8.6
Q6	.	.	.	.	.	.	9.9	18.5	4.0	7.3	3.0	8.9
Q7	.	.	.	.	.	.	9.5	12.1	4.8	10.5	2.0	4.2
Q8	.	.	.	.	.	.	9.8	21.6	3.3	7.1	3.2	10.3
Q9	.	.	.	.	.	.	423.4	12004.2	6.0	8.9	2227.3	4960882.7
Q10	.	.	.	.	.	.	391.7	8003.1	5.3	12.9	1744.0	3041482.1
Q11	13.6	38.1	5.6	12.0	7.3	52.7	10.9	20.7	6.4	7.6	3.5	12.1
Q12	15.8	43.7	6.4	14.2	9.5	89.4	10.0	14.7	5.8	10.4	2.0	4.0
Q14	17.0	44.5	6.3	11.4	8.0	64.1	8.6	18.4	5.5	7.3	2.0	4.0
Q15	20.9	66.7	7.9	14.8	12.3	150.7	9.7	17.1	5.9	10.2	2.1	4.6
Q16	23.1	53.2	7.1	11.6	10.9	118.7	8.7	13.4	5.4	8.5	1.9	3.6
Q17	21.4	75.8	8.1	19.1	13.8	190.0	9.2	14.8	5.5	6.9	2.0	4.2
Q18	17.9	41.8	6.8	20.2	7.0	48.5	8.4	11.3	5.3	8.0	1.2	1.4
Q19	16.9	33.9	8.6	14.4	5.9	34.6	9.0	15.7	5.7	8.9	1.8	3.3
Q20	20.5	41.8	7.4	18.0	9.5	91.0	7.4	11.2	4.1	7.0	1.9	3.6
Q21	22.8	60.0	7.9	7.9	12.1	145.6	9.2	13.8	5.2	9.1	2.5	6.1
Q22	26.4	126.1	5.8	9.5	26.3	690.0	8.1	11.5	4.6	7.6	1.5	2.4
Q23	30.4	79.3	7.5	15.3	22.0	485.6	8.9	11.9	4.2	7.8	1.9	3.5
Q24	19.9	67.8	4.0	18.3	13.0	169.6	8.8	14.9	3.3	8.8	2.2	4.9
Q25	18.5	70.1	5.6	9.3	12.5	155.2	8.5	14.3	3.7	6.8	2.2	4.9
Q26	23.2	62.1	1.8	27.6	14.3	204.3	9.7	17.4	4.1	7.1	2.9	8.6

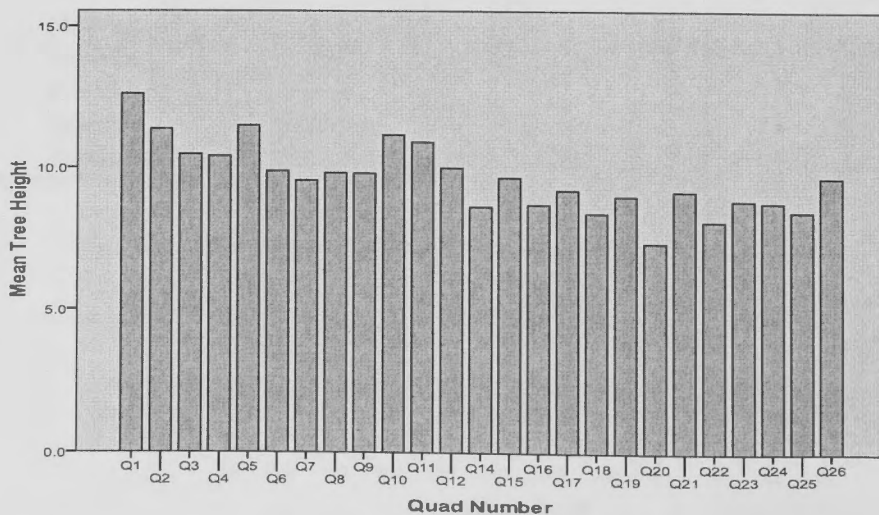


Figure 24 Mean height of trees in the quadrat on the Menanggul

Table 19 Basal area in each quadrat on the Menanggul at the start of the study and at the end of the study. Mean, maximum, minimum, mode, standard deviation and variance in within the quadrat are listed for each.

Quad #	Month											
	Start						End					
	Mean	Max	Min	Mode	STD	Variance	Mean	Max	Min	Mode	STD	Variance
Q1	.	.	.	.	.	.	6.1	84.9	.7	1.0	17.1	292.0
Q3	.	.	.	.	.	.	6.0	41.0	.8	1.7	9.2	84.2
Q4	.	.	.	.	.	.	4.6	21.1	.7	1.3	5.6	31.0
Q5	.	.	.	.	.	.	3.1	20.9	.0	.9	4.3	18.5
Q6	.	.	.	.	.	.	4.7	49.2	.7	1.5	8.9	79.0
Q7	.	.	.	.	.	.	2.0	5.0	.0	.9	1.4	2.0
Q8	.	.	.	.	.	.	3.9	41.0	.2	.8	7.6	57.6
Q9	.	.	.	.	.	.	7.2	67.4	.8	.9	15.5	241.4
Q10	.	.	.	.	.	.	5.0	58.0	.7	.9	12.3	151.5
Q11	4.5	31.2	.0	1.3	7.8	60.1	7.3	77.3	.7	1.1	15.3	233.3
Q12	4.7	20.9	.7	2.2	5.0	24.6	4.7	20.6	.7	1.0	4.8	23.2
Q14	3.4	23.3	.7	.7	5.1	25.5	3.8	30.3	.6	.9	5.7	32.6
Q15	3.7	17.4	.7	.8	4.1	16.6	3.8	16.7	.7	.9	4.2	17.8
Q16	2.8	9.1	.8	.9	2.2	4.8	2.9	10.6	.7	1.5	2.3	5.5
Q17	3.3	16.7	.7	1.0	3.6	12.6	3.5	17.7	.5	.9	3.7	13.8
Q18	2.3	10.0	.7	1.0	2.0	4.1	2.4	11.3	.7	.8	2.3	5.1
Q19	2.8	18.9	.7	.9	3.5	12.6	3.3	20.6	.6	.9	4.2	18.0
Q2	.	.	.	.	.	.	3.8	25.6	.8	.8	5.4	29.4
Q20	5.7	49.7	.8	.8	9.5	91.2	5.4	49.2	.5	1.0	9.4	87.7
Q21	4.7	16.7	.8	.9	5.4	28.9	5.5	17.2	.8	1.1	5.7	32.7
Q22	8.6	71.6	.8	1.0	16.5	273.9	5.6	37.3	.9	1.1	8.4	70.9
Q23	10.3	71.6	.8	.9	17.2	295.7	10.8	93.6	.9	1.0	20.9	436.8
Q24	4.0	13.4	.7	.8	3.7	14.0	5.8	70.2	.7	1.0	11.5	132.6
Q25	4.5	25.8	.7	.8	5.3	28.1	4.5	24.1	.8	.8	5.2	26.6
Q26	7.5	69.3	.7	1.0	13.1	172.5	7.7	75.5	.7	.9	14.3	205.1

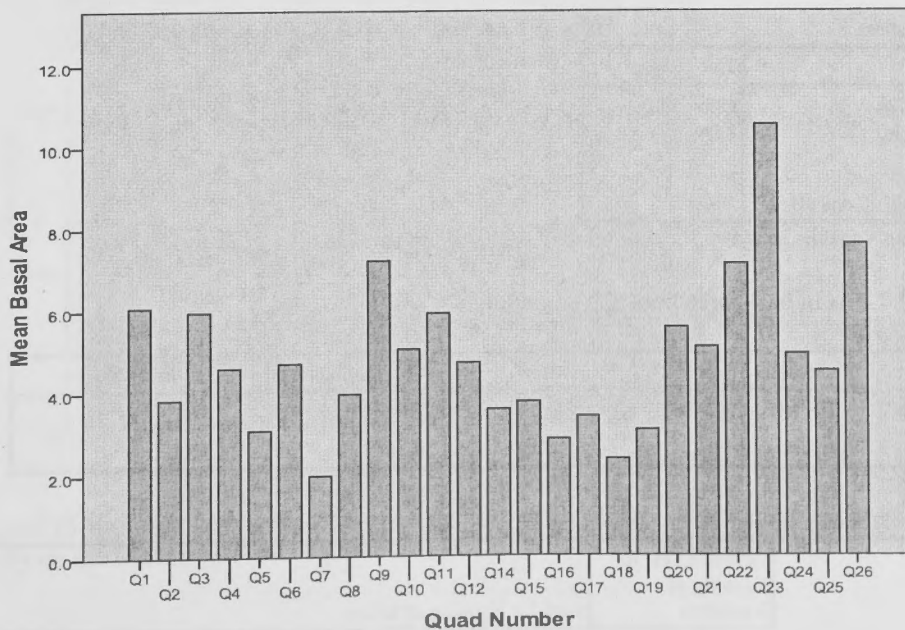


Figure 25 Frequency of basal area by quadrat on the Menanggul

Table 20 T-test between the tree height at the beginning and end of the study.

Group Statistics

	Month	N	Mean	Std. Deviation	Std. Error Mean
Tree Height	Start	546	20.104	12.8574	.5502
	End	825	9.563	2.6424	.0920

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Tree Height	Equal variances assumed	419.510	.000	22.835	1369	.000	10.5411	.4616	9.6356	11.4467
	Equal variances not assumed			18.895	575.598	.000	10.5411	.5579	9.4454	11.6369

As Levene's test returned a significant value a Mann-Whitney U test was performed

Table 21 Pair wise comparison between tree heights at the beginning and the end of the study on the Menanggul.

Ranks

	Month	N	Mean Rank	Sum of Ranks
Tree Height	Start	550	993.69	546530.00
	End	834	493.87	411890.00
	Total	1384		

Test Statistics

	Tree Height
Mann-Whitney U	63695.000
Wilcoxon W	411890.000
Z	-22.768
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: Month

Table 22 T-test of basal area between beginning and end of the study.

Group Statistics

	Month	N	Mean	Std. Deviation	Std. Error Mean
Basal Area	Start	546	4.509	7.8173	.3346
	End	825	4.729	9.2658	.3226

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						

									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Basal Area	Equal variances assumed	1.084	.298	-.459	1369	.646	-.2208	.4810	-1.1644	.7227
	Equal variances not assumed			-.475	1291.286	.635	-.2208	.4647	-1.1326	.6909

Unnecessary but a Mann-Whitney U test was performed

Table 23 Pair wise comparison between basal area at the beginning and the end of the study on the Menanggul.

Ranks

	Month	N	Mean Rank	Sum of Ranks
Basal Area	Start	550	693.63	381494.50
	End	830	688.43	571395.50
	Total	1380		

Test Statisticsa

	Basal Area
Mann-Whitney U	226530.500
Wilcoxon W	571395.500
Z	-.237
Asymp. Sig. (2-tailed)	.812

a. Grouping Variable: Month

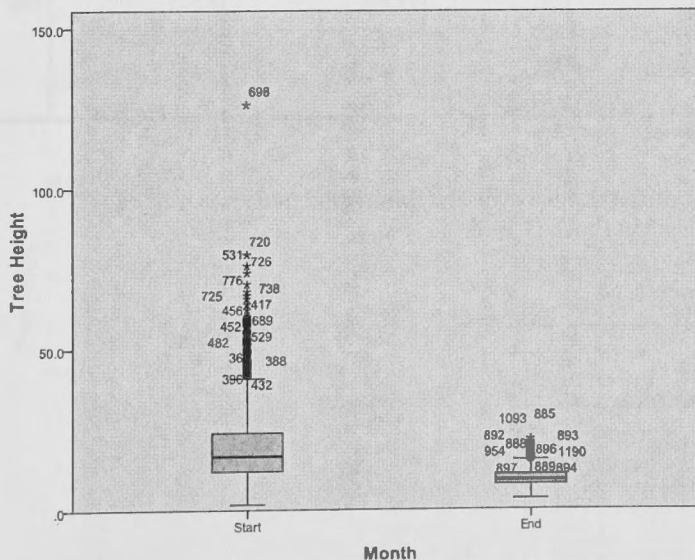


Figure 25 Variance demonstrated by boxplot of tree height from the beging to end of the study on the Menanggul

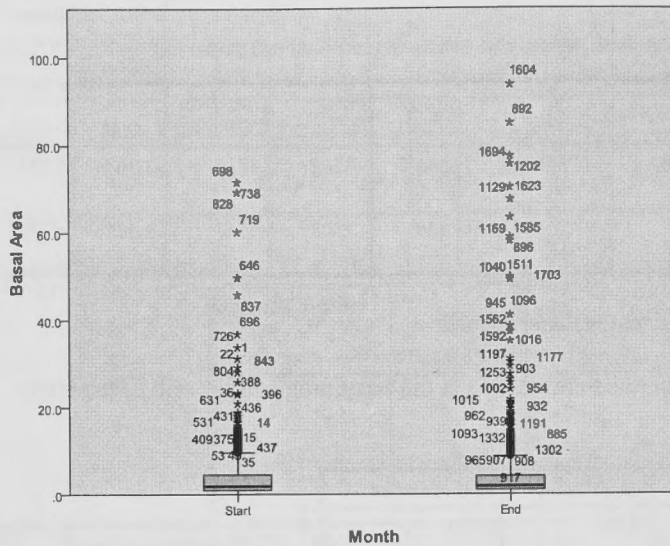


Figure 26 Variance demonstrated by boxplot of basal area from the beginning to end of the study on the Menanggul

Table 24 Comparison of variance in tree height between quadrats on the Menanggul using an Anova with Bonferonni post hoc test.

Tests of Between-Subjects Effects  
Dependent Variable: Tree Height

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1060.816a	24	44.201	7.535	.000
Intercept	70584.701	1	70584.701	12033.219	.000
QuadNumber	1060.816	24	44.201	7.535	.000
Error	4692.656	800	5.866		
Total	81193.350	825			
Corrected Total	5753.473	824			

a. R Squared = .184 (Adjusted R Squared = .160)

Bonferroni found a significant difference between the following quadrats  
The mean difference is significant at the 0.05 level.

Quad	Quad	Mean Difference	Std Error	Sig.
1	6	2.719	.5503	.000
1	7	3.060	.6627	.001
1	8	2.786	.5650	.000
1	9	2.795	.6181	.002
1	12	2.602	.6381	.015
1	14	3.978	.5453	.000
1	15	2.947	.5406	.000
1	16	3.890	.6015	.000
1	17	3.384	.5754	.000
1	18	4.199	.5266	.000
1	19	3.601	.5530	.000
1	20	5.238	.6181	.000
1	21	3.415	.6627	.000
1	22	4.468	.6722	.000
1	23	3.724	.6181	.000
1	24	3.798	.5754	.000
1	25	4.106	.5587	.000
1	26	2.901	.5650	.000

2	14	2.745	.5920	.001
2	16	2.657	.6441	.012
2	18	2.966	.5748	.000
2	19	2.369	.5991	.025
2	20	4.005	.6596	.000
2	22	3.235	.7106	.002
2	24	2.565	.6198	.012
2	25	2.873	.6044	.001
3	20	3.113	.6992	.003
4	20	3.039	.6364	.001
5	14	2.868	.6256	.002
5	16	2.779	.6752	.013
5	18	3.088	.6094	.000
5	19	2.491	.6324	.027
5	20	4.128	.6900	.000
5	22	3.357	.7389	.002
5	23	2.613	.6900	.049
5	24	2.687	.6520	.012
5	25	2.995	.6374	.001
6	20	2.519	.5830	.005
8	20	2.452	.5968	.013
10	14	2.542	.6466	.027
10	18	2.763	.6309	.004
10	20	3.802	.7091	.000
10	22	3.032	.7567	.020
10	25	2.670	.6580	.016
11	14	2.282	.5660	.018
11	18	2.503	.5480	.002
11	20	3.542	.6364	.000
11	22	2.772	.6891	.019
11	25	2.410	.5790	.1010
12	20	2.636	.6664	.025
15	20	2.291	.5738	.021
20	26	-2.337	.5968	.029

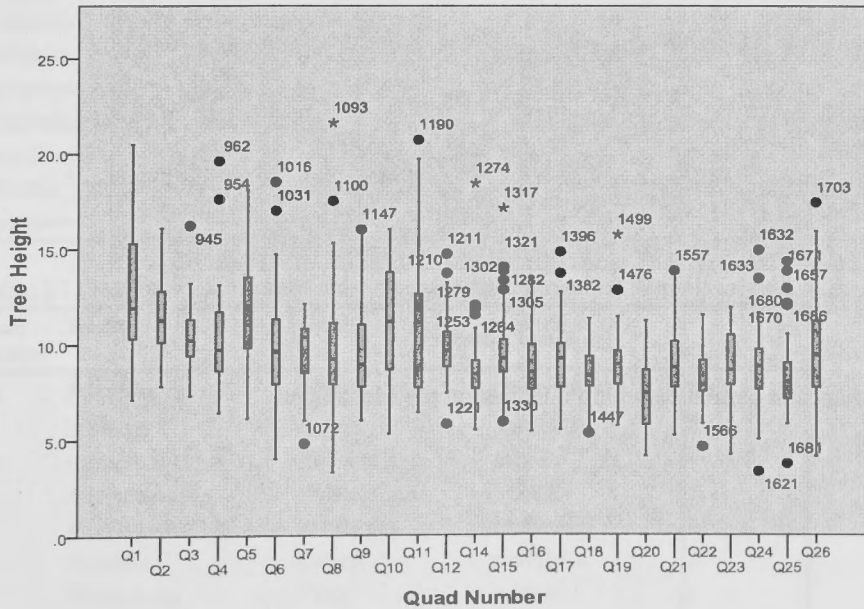


Figure 27 Variance in tree height within quadrats on the Menanggul



Table 25 Comparison of variance in basal area between quadrats on the Menanggul using an Anova with Bonferonni post hoc test.

Tests of Between-Subjects Effects  
Dependent Variable: Basal Area

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2854.633a	24	118.943	1.356	.119
Intercept	18444.107	1	18444.107	210.326	.000
QuadNumber	2854.633	24	118.943	1.356	.119
Error	70417.529	803	87.693		
Total	92229.470	828			
Corrected Total	73272.161	827			

a. R Squared = .039 (Adjusted R Squared = .010)

Bonferonni found a significant difference between the following quadrats  
The mean difference is significant at the 0.05 level.

Quad	Quad	Mean Difference	Std Error	Sig.
18	23	-8.368	2.1675	.037

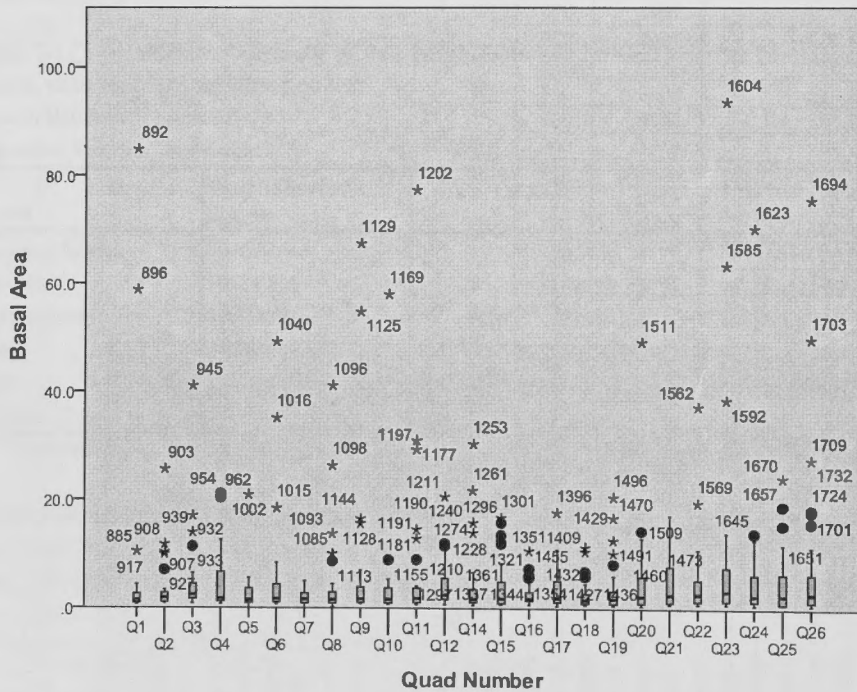


Figure 28 Variance in basal area within quadrats on the Menanggul

## Resang

Table 26 Count of trees in the same Family for all quadrat on the Resang.

Family	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Anacardiaceae	0	0	0	0	0	1	2	1	2
Annonaceae	0	0	0	0	1	0	0	2	0
APO?	0	0	0	4	0	0	0	0	0
Bombacaceae	0	0	0	1	0	0	1	0	1
Burseraceae	0	0	0	0	0	0	1	0	0
Chrysobalanaceae	0	0	0	1	0	0	1	0	0
Datisceae	0	0	1	0	0	0	0	0	0
Dead	0	0	0	3	0	1	1	1	0
Dilleniaceae	0	0	0	1	3	0	1	0	0
Dipterocarpaceae	0	0	0	0	0	1	6	1	0
Ebenaceae	0	0	0	2	2	0	1	5	0
Elaeocarpaceae	0	0	0	0	1	0	0	0	0
Euphorbiaceae	0	1	2	2	2	0	17	16	4
Flacourtiaceae	0	1	0	0	0	0	1	1	1
Guttiferae	0	0	0	0	3	0	1	1	0
Hypericaceae	0	0	0	0	2	0	0	0	1
Lauraceae	0	0	0	1	1	0	1	4	0
Leguminosae	0	0	0	0	0	0	1	0	0
Melastomataceae	0	0	0	2	4	0	0	0	0
Missing	0	0	0	1	0	0	0	0	0
Moraceae	1	1	0	0	0	0	0	0	1
Myristicaceae	0	0	0	0	0	0	0	3	0
Myrtaceae	0	0	0	0	3	0	5	2	1
Ochnaceae	0	0	0	0	0	0	1	1	0
Polygalaceae	0	0	0	0	0	0	2	0	0
Proteaceae	0	0	0	0	0	0	0	1	0
Rubiaceae	0	0	0	2	2	3	0	0	0
Sapotaceae	0	0	0	4	0	0	0	1	1
Simaroubaceae	0	0	0	0	0	0	2	0	0
Sterculiaceae	0	0	1	2	0	0	1	1	0
Tiliaceae	1	2	2	0	7	19	0	0	0
Verbenaceae	0	1	0	0	1	1	1	1	0

Table 27 Quadrat make up by family, genus and species on Resang

Quad Number	Family	Genus	Species	Count
Q1	Moraceae	Ficus	racemosa var e	1
	Tiliaceae	Colona	serritifolia	1
Q2	Euphorbiaceae	Excoecaria	indica	1
	Flacourtiaceae	Hydnocarpus	woodii	1
	Moraceae	Artocarpus	elasticus	1
	Tiliaceae	Colona	serritifolia	2
	Verbenaceae	Vitex	pinnata	1
Q3	Datisceae	Octomeles	sumatrana	1
	Euphorbiaceae	Baccaurea	stipulata	1
		Glochidion	spc.	1
	Sterculiaceae	Kleinhovia	hospita	1

Q4	Tiliaceae	Colona	serritifolia	2
	APO?	Rauwolfia	sumatrana	4
	Bombacaceae	Durio	kutejensis	1
	Chrysobalanaceae	Parinari	oblongifolia	1
	dead			3
	Dilleniaceae	Dillenia	excelsa	1
	Ebenaceae	Diospyros	spc.	2
	Euphorbiaceae	Excoecaria	indica	1
		Mallotus	penangensis	1
	Lauraceae	Endiandra	spc.	1
	Melastomataceae	Memecylon	spc.	1
		Pternandra	spc.	1
	missing			1
	Rubiaceae	Ludekia	borneensis	1
		Nauclea	spc.	1
	Sapotaceae	Madhuca	spc.	3
		Palaquium	spc.	1
Q5	Sterculiaceae	Pterospermum	macrocarpum	2
	Annonaceae	Polyalthia	obliqua	1
	Dilleniaceae	Dillenia	excelsa	3
	Ebenaceae	Diospyros	elliptifolia	1
			spc.	1
	Elaeocarpaceae	Elaeocarpus	spc.	1
	Euphorbiaceae	Antidesma	spc.	1
		Baccaurea	stipulata	1
	Guttiferae	Garcinia	spc.	3
	Hypericaceae	Cratoxylum	spc.	2
	Lauraceae	Nothaphoebe	spc.	1
	Melastomataceae	Memecylon	beccarianum	3
			spc.	1
	Myrtaceae	Eugenia	spc.	3
	Rubiaceae	Ludekia	borneensis	1
		Nauclea	spc.	1
	Q6	Tiliaceae	Colona	serritifolia
		Microcos	crassifolia	2
Verbenaceae		Vitex	pinnata	1
Anacardiaceae		Melanochyla	auriculata	1
dead				1
Dipterocarpaceae		Dipterocarpus	validus	1
Rubiaceae		Nauclea	spc.	3
Tiliaceae		Colona	serritifolia	19
Verbenaceae		Vitex	pinnata	1
Q7		Anacardiaceae	Buchanania	arborescens
		Dracontomelon	doa	1
	Bombacaceae	Durio	grandiflorus	1
	Burseraceae	Canarium	denticulatum	1
	Chrysobalanaceae	Parinari	oblongifolia	1
	dead			1
	Dilleniaceae	Dillenia	excelsa	1
	Dipterocarpaceae	Vatica	rassak	6
	Ebenaceae	Diospyros	spc.	1
	Euphorbiaceae	Aporusa	spc.	1

		Cleistanthus	myranthus	1
		Croton	oblongus	12
		Macaranga	conifera	1
			gigantea	1
		Paracorton	pendulus	1
	Flacourtiaceae	Hydnocarpus	woodii	1
	Guttiferae	Mesua	elmeri	1
	Lauraceae	Endiandra	spc.	1
	Leguminosae	Archidendron	spc.	1
	Myrtaceae	Eugenia	spc.	5
	Ochnaceae	Gomphia	serrata	1
	Polygalaceae	Xanthophyllum	spc.	2
	Simaroubaceae	Quassia	indica	2
	Sterculiaceae	Pterospermum	elongatum	1
	Verbenaceae	Vitex	pinnata	1
Q8	Anacardiaceae	Androtrium	astylum	1
	Annonaceae	Cananga	odorata	1
		Polyalthia	obliqua	1
	dead			1
	Dipterocarpaceae	Vatica	rassak	1
	Ebenaceae	Diospyros	elliptifolia	1
			spc.	4
	Euphorbiaceae	Aporusa	spc.	6
		Croton	oblongus	6
		Glochidion	spc.	2
		Neoscortechin	forbesii	1
		Paracorton	pendulus	1
	Flacourtiaceae	Hydnocarpus	woodii	1
	Guttiferae	Garcinia	spc.	1
	Lauraceae	Endiandra	spc.	1
		Litsea	spc.	3
	Myristicaceae	Knema	spc.	3
	Myrtaceae	Eugenia	spc.	2
	Ochnaceae	Gomphia	serrata	1
	Proteaceae	Helicia	spc.	1
	Sapotaceae	Madhuca	spc.	1
	Sterculiaceae	Heritiera	elmeri	1
	Verbenaceae	Vitex	pinnata	1
Q9	Anacardiaceae	Mangifera	spc.	1
		Melanochyla	spc.	1
	Bombacaceae	Durio	grandiflorus	1
	Euphorbiaceae	Croton	oblongus	1
		Excoecaria	indica	2
		Mallotus	muticus	1
	Flacourtiaceae	Flacourtia	rukam	1
	Hypericaceae	Cratoxylum	spc.	1
	Moraceae	Ficus	spc.	1
	Myrtaceae	Eugenia	spc.	1
	Sapotaceae	Madhuca	spc.	1

Table 28 Number of trees in each quadrat on the Resang

Quad Number	Tree
Q1	2
Q2	6
Q3	6
Q4	26
Q5	32
Q6	26
Q7	47
Q8	42
Q9	12

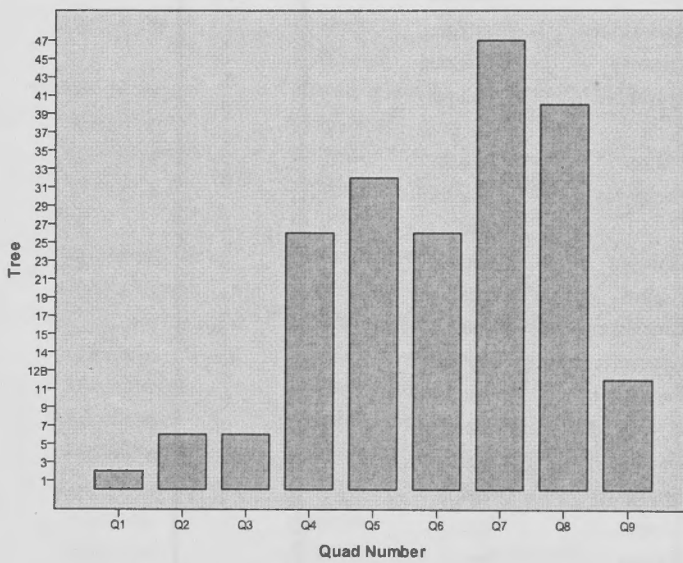


Figure 29 Number of trees in each quadrat on the Resang

Table 29 Tree height in each quadrat on the Resang at the start of the study and at the end of the study. Mean, maximum, minimum, mode, standard deviation and variance in within the quadrat are listed for each.

Quad #	Month											
	Start						End					
	Tree Height						Tree Height					
	Mean	Max	Min	Mode	STD	Variance	Mean	Max	Min	Mode	STD	Variance
Q3	17.1	30.7	5.0	5.0	9.4	89.1	14.4	25.5	6.5	6.5	7.3	53.1
Q4	19.5	56.0	4.2	4.2	11.1	122.9	13.5	27.3	5.8	12.5	5.6	31.8
Q5	16.4	37.0	3.5	3.5	9.3	87.3	11.8	26.1	3.9	8.2	4.6	20.8
Q6	18.5	46.3	4.9	15.4	10.4	108.6	15.7	31.4	4.2	8.6	8.6	73.7
Q7	11.8	28.2	4.1	9.0	5.2	27.2	10.2	20.0	4.1	5.4	3.3	10.7
Q8	18.0	72.4	6.3	18.6	11.9	141.0	12.5	24.4	4.0	8.4	4.8	23.2
Q9	17.8	38.9	4.5	4.5	9.5	91.0	12.9	31.9	1.9	1.9	8.3	69.2

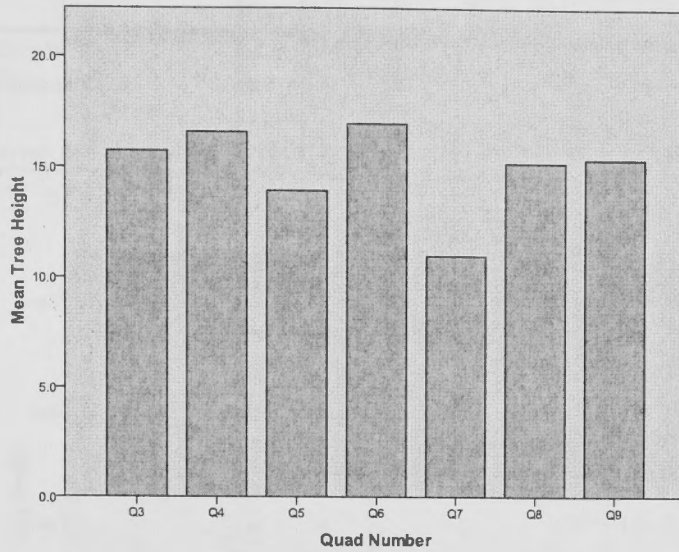


Figure 30 Mean heights of trees in each quadrat on the Resang

Table 30 Basal area in each quadrat on the Resang at the start of the study and at the end of the study. Mean, maximum, minimum, mode, standard deviation and variance in within the quadrat are listed for each.

Quad #	Month											
	Start						End					
	Basal Area						Basal Area					
	Mean	Max	Min	Mode	STD	Variance	Mean	Max	Min	Mode	STD	Variance
Q3	4.3	16.7	.9	.9	6.9	48.2	3.8	17.2	.5	.5	6.6	43.2
Q4	5.6	45.8	.8	1.3	10.4	107.6	4.3	22.5	1.0	1.3	5.4	29.6
Q5	2.3	12.4	.7	.7	2.6	6.7	2.4	12.7	.5	.7	3.0	9.2
Q6	2.6	7.3	.8	1.1	2.1	4.5	3.6	16.7	.7	1.2	3.6	12.9
Q7	1.8	6.4	.7	.8	1.5	2.2	1.8	6.2	.6	.7	1.3	1.7
Q8	3.9	27.8	.7	.8	5.7	32.3	4.5	56.3	.7	.8	9.0	81.4
Q9	7.1	36.8	.7	.7	10.1	101.1	6.7	35.8	.7	3.0	9.8	96.5

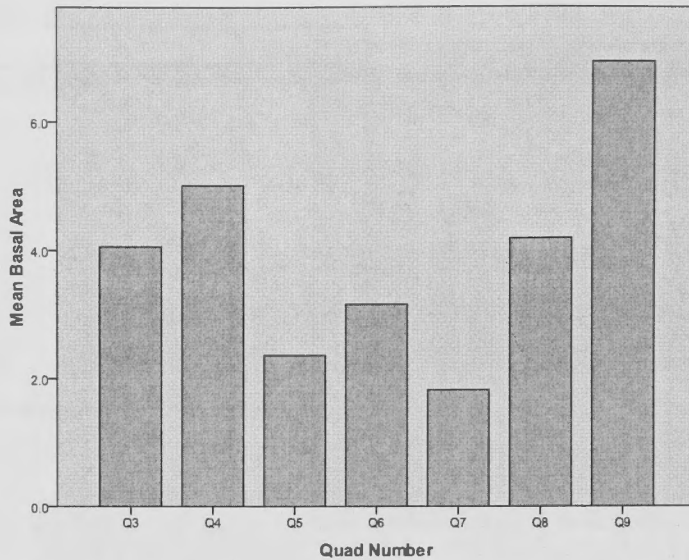


Figure 31 Mean basal area by quadrat on the Resang.

Table 31 T-test between tree height on the Resang from the beginning to and end of the study

Group Statistics

	Month	N	Mean	Std. Deviation	Std. Error Mean
Tree Height	Start	177	16.295	9.8076	.7372
	End	180	12.334	5.6848	.4237

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Tree Height	Equal variances assumed	20.564	.000	4.678	355	.000	3.9610	.8467	2.2958	5.6263
	Equal variances not assumed			4.658	281.313	.000	3.9610	.8503	2.2873	5.6348

As Levenes' test was significant a Mann-Whitney U was done

Table 32 Pair wise comparison between tree heights at the beginning and the end of the study on the Resang.

Ranks

	Month	N	Mean Rank	Sum of Ranks
Tree Height	Start	178	205.41	36563.50
	End	182	156.13	28416.50
	Total	360		

Test Statisticsa

	Tree Height
Mann-Whitney U	11763.500
Wilcoxon W	28416.500
Z	-4.492
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: Month

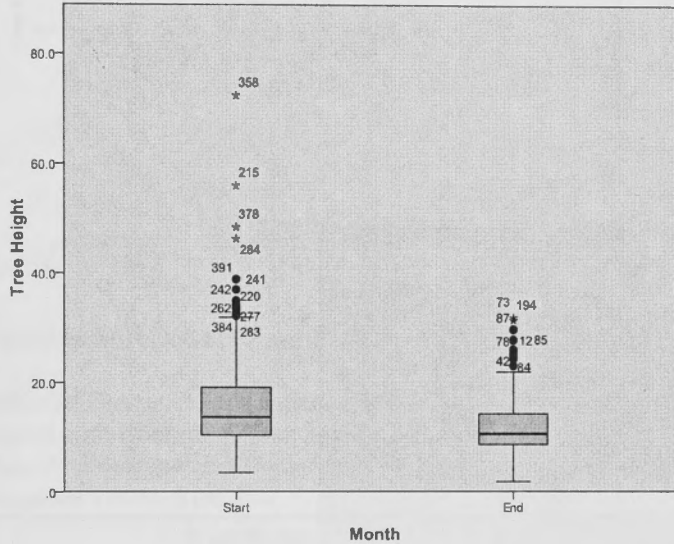


Figure 32 Variance of tree height on the Resang displayed by boxplot between beging to end of the study.

Table 33 T-test of basal area on the Resang between beginning and end of the study.

Group Statistics

	Month	N	Mean	Std. Deviation	Std. Error Mean
Basal Area	Start	177	3.408	5.7642	.4333
	End	180	3.429	5.7990	.4322

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Basal Area	Equal variances assumed	.007	.933	-.033	355	.973	-.0204	.6120	-1.2241	1.1832
	Equal variances not assumed			-.033	354.958	.973	-.0204	.6120	-1.2240	1.1832

Unecessary but a Mann-Whitney U was also performed

Table 34 Pair wise comparison between basal area at the beginning and the end of the study on the Resang.



Ranks

	Month	N	Mean Rank	Sum of Ranks
Basal Area	Start	177	177.42	31403.50
	End	182	182.51	33216.50
	Total	359		

Test Statistics

	Basal Area
Mann-Whitney U	15650.500
Wilcoxon W	31403.500
Z	-.465
Asymp. Sig. (2-tailed)	.642

a. Grouping Variable: Month

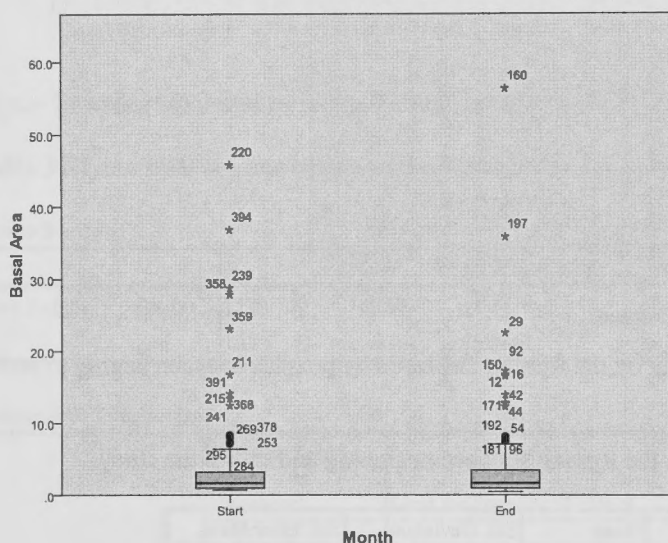


Figure 33 Variance in basal area displayed by boxplot from beginning to end of study on Resang

Table 35 Comparison of variance in tree height between quadrats on the Resang using an Anova with Bonferonni post hoc test.

Tests of Between-Subjects Effects

Dependent Variable: Tree Height

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	529.068a	6	88.178	2.903	.010
Intercept	19350.201	1	19350.201	636.939	.000
QuadNumber	529.068	6	88.178	2.903	.010
Error	5255.736	173	30.380		
Total	33167.270	180			
Corrected Total	5784.803	179			

a. R Squared = .091 (Adjusted R Squared = .060)

Bonferonni found a significant difference between the following quadrats

The mean difference is significant at the 0.05 level.

Quad	Quad	Mean Difference	Std Error	Sig.
6	7	5.467	1.3695	.002

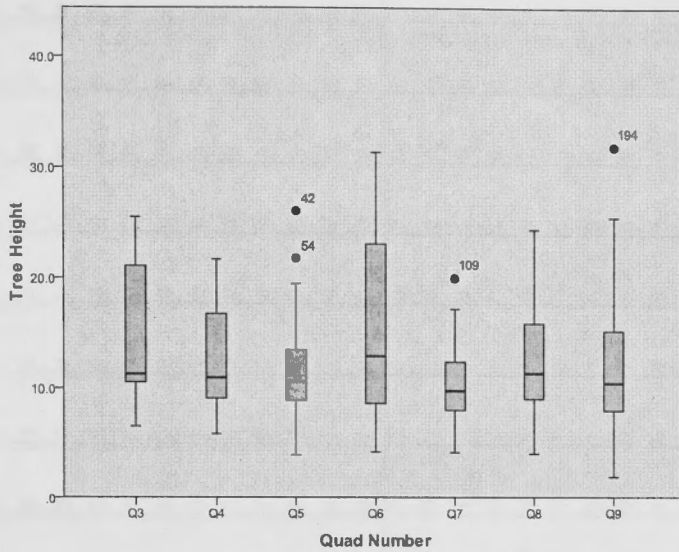


Figure 34 Variance of tree height over quadrats on Resang in boxplot.

Table 36 Comparison of variance in basal area between quadrats on the Resang using an Anova with Bonferonni post hoc test.

Tests of Between-Subjects Effects  
 Dependent Variable: Basal Area

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	341.549a	6	56.925	1.734	.116
Intercept	1760.511	1	1760.511	53.641	.000
QuadNumber	341.549	6	56.925	1.734	.116
Error	5677.940	173	32.820		
Total	8135.800	180			
Corrected Total	6019.490	179			

a. R Squared = .057 (Adjusted R Squared = .024)

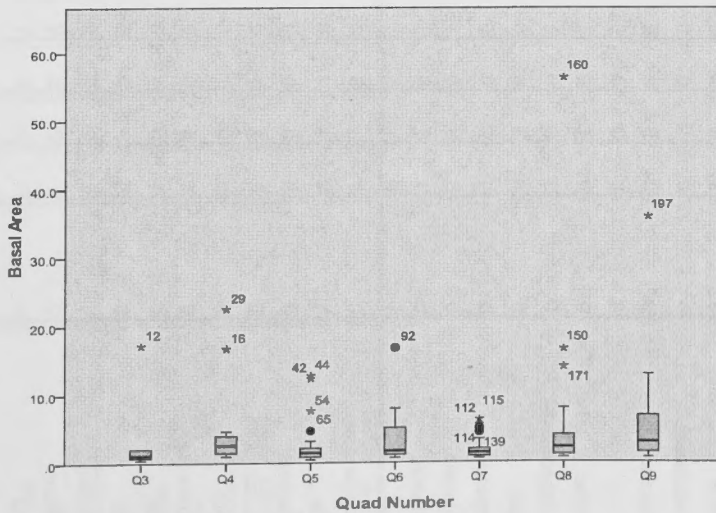


Figure 35 Variance in basal area in quadrats on the Resang displayed in boxplot.

# Tenagang Besar

Table 37 Count of trees in the same Family for all quadrat on the Tenagang Besar.

Family	Quad #																					
	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
Anacardiaceae	0	1	0	0	0	0	1	0	0	0	0	1	0	2	1	1	0	0	0	0	0	0
Annonaceae	0	1	1	0	3	0	4	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0
Apocynaceae	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Burseraceae	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chrysobalanaceae	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Combretaceae	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dead	0	0	0	0	0	0	0	0	0	1	2	1	3	1	0	0	1	0	0	0	0	0
Dilleniaceae	0	0	1	0	3	5	4	3	2	3	0	1	2	2	0	1	4	0	0	0	0	1
Dipterocarpaceae	0	0	0	0	1	1	1	1	2	4	0	1	1	1	0	1	0	0	0	0	0	0
Ebenaceae	0	0	3	0	0	2	3	1	1	1	2	3	0	1	0	0	1	0	0	1	0	0
Elaeocarpaceae	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
Euphorbiaceae	0	3	8	6	13	15	14	15	7	13	8	3	3	5	3	3	4	0	2	0	0	0
Flacourtiaceae	0	3	2	0	1	3	3	1	5	1	4	7	2	0	0	0	2	0	0	0	0	0
Guttiferae	1	0	1	0	1	0	1	0	1	1	2	1	0	0	0	2	0	0	0	0	0	0
Hypericaceae	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Lauraceae	3	4	3	0	0	3	1	1	2	5	0	4	0	0	0	1	1	0	0	0	0	0
Lecythidaceae	0	0	0	0	0	0	0	0	0	1	0	0	0	2	1	0	0	0	0	0	0	0
Leguminosae	0	0	2	1	0	0	0	1	0	0	0	0	2	0	1	0	0	0	0	0	0	0
Lythraceae	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Melastomataceae	0	0	4	0	2	4	1	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0
Meliaceae	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Moraceae	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0
Myristicaceae	0	2	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0
Myrsinaceae	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Myrtaceae	0	3	2	0	1	0	1	1	2	1	1	3	0	1	0	1	0	0	1	0	0	0

Oleaceae	2	0	0	0	0	2	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
Polygalaceae	1	0	1	0	0	1	0	1	0	1	3	2	0	1	0	0	0	0	0	0	0	0
Proteaceae	0	0	0	0	0	0	2	0	3	2	1	2	0	0	0	0	0	0	0	0	0	0
Rhizophoraceae	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rubiaceae	2	2	2	1	2	1	1	4	1	4	1	2	1	3	2	1	0	0	0	1	1	0
Sapindaceae	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sapotaceae	1	0	1	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Simaroubaceae	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sterculiaceae	7	4	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Theaceae	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Tiliaceae	6	5	0	3	2	0	0	0	0	1	1	2	7	10	1	5	2	0	0	3	1	0
Verbenaceae	3	0	1	6	5	1	2	0	1	2	1	2	6	4	3	1	4	0	0	3	1	0

Table 38 Quadrat by family, genus and species on Tenagang Besar.

Quad #	Family	Genus	Species	Count	
Q2	Guttiferae	Garcinia	spc.	1	
	Lauraceae	Endiandra	spc.	3	
	Oleaceae	Chionanthus	spc.	2	
	Polygalaceae	Xanthophyllum	spc.	1	
	Rubiaceae	Nauclea	spc.	1	
			Pleiocarpidia	sandakanica	1
	Sapindaceae	Mischorcerpus	spc.	2	
	Sapotaceae	Madhuca	spc.	1	
	Simaroubaceae	Quassia	indica	1	
	Sterculiaceae	Pterospermum	elongatum	5	
			microcarpum	2	
	Tiliaceae	Colona	serritifolia	4	
			Microcos	crassifolia	2
	Verbenaceae	Teijsmanniodes	spc.	2	
			Vitex	pinnata	1
	Q3	Anacardiaceae	Mangifera	spc.	1
		Annonaceae	Polyalthia	spc.	1
Burseraceae		Canarium	denticulatum	1	
Elaeocarpaceae		Elaeocarpus	stipularis	5	
Euphorbiaceae		Antidesma	spc.	1	
			Aporusa	spc.	1
			Croton	oblongus	1
Flacourtiaceae		Hydnocarpus	woodii	3	
Hypericaceae		Cratoxylum	spc.	1	
Lauraceae		Endiandra	spc.	2	
			Litsea	spc.	2
Meliaceae		Aglaia	spc.	1	
Myristicaceae		Knema	spc.	2	
Myrsinaceae		Ardisia	spc.	1	
Myrtaceae		Eugenia	spc.	3	
Rubiaceae		Nauclea	spc.	2	
Sapindaceae		Mischorcerpus	spc.	1	
Simaroubaceae		Quassia	indica	1	
Sterculiaceae		Pterospermum	elongatum	4	
			Microcos	crassifolia	1
Tiliaceae		Colona	serritifolia	4	
			Microcos	crassifolia	1
Q4		Annonaceae	Polyalthia	obliqua	1
	Chrysobalanaceae	Atuna	cordata	1	
	Dilleniaceae	Dillenia	excelsa	1	
	Ebenaceae	Diospyros	euphlebica	1	
			spc.	2	
	Euphorbiaceae	Aporusa	spc.	1	
			Baccaurea	stipulata	2
			Croton	oblongus	1
			Drypetes	spc.	1
			Excoecaria	indica	3
	Flacourtiaceae	Flacourtia	spc.	1	
			Hydnocarpus	woodii	1
	Guttiferae	Garcinia	spc.	1	
	Hypericaceae	Cratoxylum	spc.	1	

	Lauraceae	Endiandra	spc.	3
	Leguminosae	Crudia	reticulata	1
		Dialium	indum	1
	Melastomataceae	Memecylon	beccarianum	2
			spc.	2
	Myrtaceae	Eugenia	spc.	2
	Polygalaceae	Xanthophyllum	spc.	1
	Rubiaceae	Pleiocarpidia	sandakanica	2
	Sapotaceae	Madhuca	spc.	1
	Verbenaceae	Vitex	pinnata	1
Q5	Euphorbiaceae	Glochidion	spc.	6
	Leguminosae	Crudia	reticulata	1
	Lythraceae	Lagerstroemia	speciosa	1
	Rubiaceae	Nauclea	spc.	1
	Tiliaceae	Colona	serritifolia	3
	Verbenaceae	Vitex	pinnata	6
Q6	Annonaceae	Cananga	odorata	3
	Dilleniaceae	Dillenia	excelsa	3
	Dipterocarpaceae	Dipterocarpus	validus	1
	Euphorbiaceae	Baccaurea	stipulata	2
		Croton	oblongus	5
		excoecaria	indica	1
		Excoecaria	indica	2
		Glochidion	spc.	1
		Mallotus	muticus	2
	Flacourtiaceae	Hydnocarpus	borneensis	1
	Guttiferae	Garcinia	spc.	1
	Melastomataceae	Memecylon	beccarianum	2
	Myrtaceae	Eugenia	spc.	1
	Rubiaceae	Gardenia	tubifera	1
		Nauclea	spc.	1
	Sapotaceae	Madhuca	spc.	2
	Tiliaceae	Microcos	crassifolia	2
	Verbenaceae	Teijsmanniodes	spc.	1
		Vitex	pinnata	4
Q7	Chrysobalanaceae	Atuna	spc.	1
	Dilleniaceae	Dillenia	excelsa	5
	Dipterocarpaceae	Vatica	spc.	1
	Ebenaceae	Diospyros	spc.	2
	Euphorbiaceae	Antidesma	spc.	2
		Croton	oblongus	12
		Mallotus	muticus	1
	Flacourtiaceae	flacourtia	spc.	2
		Hydnocarpus	borneensis	1
	Lauraceae	Cryptocarya	spc.	2
		Endiandra	spc.	1
	Melastomataceae	Memecylon	beccarianum	1
		Pternandra	spc.	3
	Oleaceae	Chionanthus	spc.	2
	Polygalaceae	Xanthophyllum	spc.	1
	Rubiaceae	Nauclea	spc.	1
	Theaceae	?	?	1
	Verbenaceae	Vitex	pinnata	1
Q8	Anacardiaceae	Buchanania	arborescens	1

	Annonaceae	Cananga	odorata	4
	Combretaceae	Terminalia	spc.	1
	Dilleniaceae	Dillenia	excelsa	4
	Dipterocarpaceae	Dipterocarpus	validus	1
	Ebenaceae	Diospyros	spc.	3
	Euphorbiaceae	Baccaurea	stipulata	2
		Croton	oblongus	10
		excoecaria	indica	1
		Mallotus	muticus	1
	Flacourtiaceae	flacourtia	spc.	2
		Hydnocarpus	borneensis	1
	Guttiferae	Mesua	elmeri	1
	Lauraceae	Cryptocarya	spc.	1
	Melastomataceae	Memecylon	spc.	1
	Myrtaceae	Eugenia	spc.	1
	Proteaceae	Helicia	robusta	2
	Rubiaceae	Nauclea	spc.	1
	Verbenaceae	Teijsmanniode	spc.	1
		Vitex	pinnata	1
Q9	?	?		1
			?	1
	Annonaceae	Cananga	odorata	1
	Combretaceae	Terminalia	spc.	1
	Dilleniaceae	Dillenia	excelsa	3
	Dipterocarpaceae	Vatica	rassak	1
	Ebenaceae	Diospyros	spc.	1
	Euphorbiaceae	Antidesma	spc.	2
		Croton	oblongus	12
		Mallotus	penangensis	1
	Flacourtiaceae	Hydnocarpus	borneensis	1
	Lauraceae	Cryptocarya	spc.	1
	Leguminosae	Crudia	reticulata	1
	Melastomataceae	Memecylon	spc.	1
	Myrtaceae	Eugenia	spc.	1
	Polygalaceae	Xanthophyllum	spc.	1
	Rhizophoraceae	Carallia	brachiata	1
	Rubiaceae	Gardenia	tubifera	1
		Nauclea	spc.	1
		Pleiocarpidia	sandakanica	2
Q10	?			1
	Dilleniaceae	Dillenia	excelsa	2
	Dipterocarpaceae	Vatica	rassak	1
			spc.	1
	Ebenaceae	Diospyros	spc.	1
	Euphorbiaceae	Baccaurea	stipulata	2
		Croton	oblongus	5
	Flacourtiaceae	flacourtia	spc.	1
		Hydnocarpus	borneensis	4
	Guttiferae	Garcinia	spc.	1
	Lauraceae	Cryptocarya	spc.	1
		Nothaphoebe	spc.	1
	Melastomataceae	Memecylon	spc.	1
	Moraceae	Ficus	spc.	1
	Myrtaceae	Eugenia	spc.	2

	Proteaceae	Helicia	robusta	3
	Rubiaceae	Gardenia	tubifera	1
	Sterculiaceae	Pterospermum	macrocarpum	1
	Verbenaceae	Vitex	pinnata	1
Q11	dead			1
	Dilleniaceae	Dillenia	excelsa	3
	Dipterocarpaceae	Dipterocarpus	validus	1
		Vatica	rassak	3
	Ebenaceae	Diospyros	spc.	1
	Euphorbiaceae	Baccaurea	stipulata	2
		Croton	oblongus	7
		Drypetes	spc.	2
		Mallotus	muticus	2
	Flacourtiaceae	flacourtia	spc.	1
	Guttiferae	Mesua	spc.	1
	Lauraceae	Cryptocarya	spc.	1
		Endiandra	spc.	2
		Nothaphoebe	spc.	2
	Lecythidaceae	Barringtonia	lanceolata	1
	Myrtaceae	Eugenia	spc.	1
	Polygalaceae	Xanthophyllum	spc.	1
	Proteaceae	Helicia	robusta	2
	Rubiaceae	Nauclea	spc.	3
		Pleiocarpidia	sandakanica	1
	Tiliaceae	Microcos	crassifolia	1
	Verbenaceae	Vitex	pinnata	2
Q19	dead			2
	Ebenaceae	Diospyros	elliptifolia	2
	Euphorbiaceae	Baccaurea	stipulata	2
		Croton	oblongus	5
		excoecaria	indica	1
	Flacourtiaceae	Flacourtia	spc.	1
		Hydnocarpus	borneensis	3
	Guttiferae	Garcinia	spc.	2
	Moraceae	Ficus	spc.	1
	Myristicaceae	Knema	spc.	2
	Myrtaceae	Eugenia	spc.	1
	Polygalaceae	Xanthophyllum	spc.	3
	Proteaceae	Helicia	robusta	1
	Rubiaceae	Pleiocarpidia	sandakanica	1
	Tiliaceae	Microcos	crassifolia	1
	Verbenaceae	Teijsmanniode	spc.	1
Q20	Anacardiaceae	Dracontomelon	doa	1
	Apocynaceae	Kibatalia	spc.	1
	Chrysobalanaceae	Atuna	spc.	1
	dead			1
	Dilleniaceae	Dillenia	excelsa	1
	Dipterocarpaceae	Vatica	rassak	1
	Ebenaceae	Diospyros	elliptifolia	1
			spc.	2
	Euphorbiaceae	Croton	oblongus	2
		Drypetes	spc.	1
	Flacourtiaceae	Hydnocarpus	borneensis	4
			polypetala	2



			woodii	1
	Guttiferae	Mesua	elmeri	1
	Lauraceae	Cryptocarya	spc.	2
		Endiandra	spc.	2
	Meliaceae	Dysoxylum	spc.	1
	Myrtaceae	Eugenia	spc.	3
	Oleaceae	Chionanthus	spc.	1
	Polygalaceae	Xanthophyllum	spc.	2
	Proteaceae	Helicia	robusta	2
	Rubiaceae	Nauclea	spc.	1
		Pleiocarpidia	sandakanica	1
	Sapotaceae	Madhuca	spc.	1
		Palaquium	spc.	1
	Tiliaceae	Microcos	crassifolia	1
			spc.	1
	Verbenaceae	Teijsmanniodes	spc.	2
Q21	dead			3
	Dilleniaceae	Dillenia	excelsa	2
	Dipterocarpaceae	Vatica	rassak	1
	Euphorbiaceae	Baccaurea	stipulata	1
		Drypetes	spc.	1
		excoecaria	indica	1
	Flacourtiaceae	flacourtia	spc.	1
		Flacourtia	spc.	1
	Leguminosae	Cynometra	ramiflora	1
		Parkia	speciosa	1
	Rubiaceae	Pleiocarpidia	sandakanica	1
	Sterculiaceae	Kleinhovia	hospita	1
	Tiliaceae	Colona	serritifolia	7
	Verbenaceae	Vitex	pinnata	6
Q22	Anacardiaceae	Dracontomelon	doa	2
	dead			1
	Dilleniaceae	Dillenia	excelsa	1
			indica	1
	Dipterocarpaceae	Dipterocarpus	validus	1
	Ebenaceae	Diospyros	spc.	1
	Euphorbiaceae	Cleistanthus	myranthus	1
		Excoecaria	indica	3
		Mallotus	muticus	1
	Lecythidaceae	Barringtonia	spc.	2
	Moraceae	Ficus	spc.	1
	Myristicaceae	Knema	spc.	1
	Myrtaceae	Eugenia	spc.	1
	Oleaceae	Chionanthus	spc.	1
	Polygalaceae	Xanthophyllum	spc.	1
	Rubiaceae	Nauclea	spc.	3
	Tiliaceae	Colona	serritifolia	10
	Verbenaceae	Vitex	pinnata	4
Q23	Anacardiaceae	Dracontomelon	doa	1
	Euphorbiaceae	Glochidion	spc.	2
		Mallotus	muticus	1
	Lecythidaceae	Barringtonia	spc.	1
	Leguminosae	Cynometra	ramiflora	1
	Rubiaceae	Neolamarckia	cadamba	2

	Tiliaceae	Colona	serritifolia	1
	Verbenaceae	Vitex	pinnata	3
Q24	Anacardiaceae	Dracontomelon	doa	1
	Annonaceae	Cananga	odorata	1
	Dilleniaceae	Dillenia	excelsa	1
	Dipterocarpaceae	Vatica	spc.	1
	Euphorbiaceae	Baccaurea	stipulata	1
		Bridelia	penangiana	1
		Mallotus	muticus	1
	Guttiferae	Mesua	elmeri	2
	Hypericaceae	Cratoxylum	spc.	1
	Lauraceae	Cryptocarya	spc.	1
	Melastomataceae	Memecylon	beccarianum	1
	Moraceae	Ficus	virens var gla	1
	Myrtaceae	Eugenia	spc.	1
	Rubiaceae	Pleiocarpidia	sandakanica	1
	Theaceae	?	?	1
	Tiliaceae	Colona	serritifolia	2
		Microcos	crassifolia	3
	Verbenaceae	Teijsmanniodes	spc.	1
Q25	dead			1
	Dilleniaceae	Dillenia	excelsa	4
	Ebenaceae	Diospyros	spc.	1
	Elaeocarpaceae	Elaeocarpus	spc.	1
	Euphorbiaceae	Bridelia	penangiana	1
		Croton	oblongus	1
		Drypetes	spc.	1
		Excoecaria	indica	1
	Flacourtiaceae	Flacourtia	spc.	1
		Hydnocarpus	borneensis	1
	Lauraceae	Cinnamomum	spc.	1
	Melastomataceae	Memecylon	beccarianum	1
	Tiliaceae	Colona	serritifolia	2
	Verbenaceae	Vitex	pinnata	4
Q26		?	?	1
Q27	?	?	?	1
	Elaeocarpaceae	Elaeocarpus	stipularis	1
	Euphorbiaceae	Croton	oblongus	1
		Glochidion	spc.	1
	Myrtaceae	Eugenia	spc.	1
Q28	Annonaceae	Cananga	odorata	1
	Ebenaceae	Diospyros	spc.	1
	Rubiaceae	Neolamarckia	cadamba	1
	Tiliaceae	Colona	serritifolia	3
	Verbenaceae	Vitex	pinnata	3
Q29	Rubiaceae	mitrogyma	speciosa	1
	Tiliaceae	Colona	serritifolia	1
	Verbenaceae	Vitex	pinnata	1
Q30	Dilleniaceae	Dillenia	excelsa	1

Table 39 Count of number of trees in each quadrat on the Tenagang Besar.

Quad Number	Count
Q2	29
Q3	39
Q4	34
Q5	18
Q6	36
Q7	40
Q8	40
Q9	35
Q10	31
Q11	41
Q19	29
Q20	41
Q21	28
Q22	36
Q23	12
Q24	22
Q25	21
Q26	1
Q27	5
Q28	9
Q29	3
Q30	1

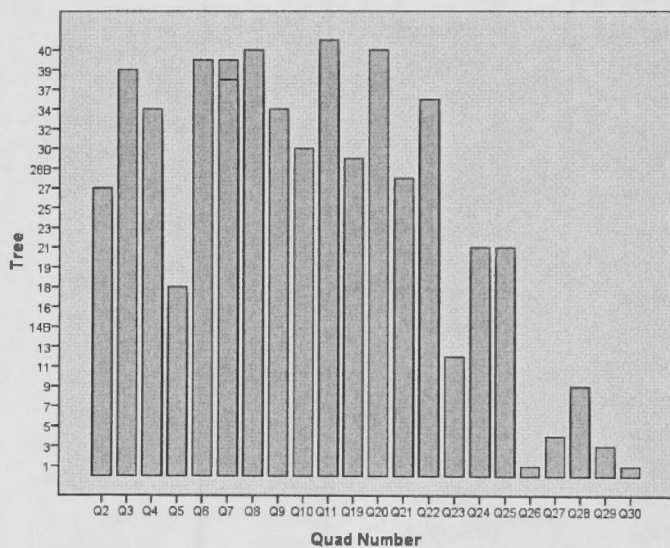


Figure 36 Mean number of tree per quadrat on Tenagang Besar

Table 40 Tree Height in each quadrat on the Tenagang Besar at the start of the study and at the end of the study. Mean, maximum, minimum, mode, standard deviation and variance in within the quadrat are listed for each.

Quad #	Month											
	Start						End					
	Mean	Max	Min	Mode	STD	Variance	Mean	Max	Min	Mode	STD	Variance
Q2	22.9	82.7	6.6	10.4	17.5	304.7	18.2	38.6	5.7	9.9	10.0	99.4
Q3	16.1	53.0	2.3	9.5	9.5	89.9	15.0	50.7	5.0	6.5	10.5	110.4
Q4	18.1	113.6	3.0	11.2	19.4	374.6	13.8	61.8	2.6	7.4	15.1	229.1
Q5	21.3	71.3	10.5	12.3	14.0	196.5	8.4	14.5	5.7	6.6	2.2	4.9
Q6	19.1	59.4	4.6	16.1	11.5	132.8	8.4	17.6	3.1	6.9	3.3	10.7
Q7	15.9	87.3	4.3	10.9	13.8	190.2	8.2	35.0	3.4	7.3	5.3	28.1
Q8	18.9	46.1	6.4	12.7	10.3	106.6	10.1	32.2	3.7	7.4	5.0	24.6
Q9	15.9	29.9	7.5	11.4	6.3	39.5	9.8	25.2	3.8	5.3	4.7	21.9
Q10	25.4	75.8	4.8	12.3	20.6	426.3	13.2	39.6	2.4	8.9	8.9	78.5
Q11	18.7	73.6	4.9	8.3	14.4	207.4	15.3	47.3	3.6	10.1	9.2	84.5
Q19	18.7	63.3	4.2	10.0	15.1	229.0	12.8	39.6	5.0	9.2	8.2	66.7
Q20	13.4	49.2	2.7	10.0	9.1	83.0	12.4	32.5	2.5	5.3	6.8	46.4
Q21	23.1	78.1	2.5	2.5	20.2	407.2	18.5	72.4	8.0	8.0	13.5	183.2
Q22	20.1	85.0	3.4	9.5	17.2	296.9	12.4	34.7	4.9	8.0	7.4	55.1
Q23	15.2	38.4	2.2	10.1	10.2	103.8	16.0	29.2	7.3	7.3	7.9	62.7
Q24	15.8	40.4	7.2	17.8	9.3	85.9	15.8	44.4	6.3	10.1	9.1	81.9
Q25	14.5	33.9	3.2	12.5	6.7	45.4	13.9	34.9	6.3	10.2	7.4	55.3
Q26	8.1	8.1	8.1	8.1	.	.	9.4	9.4	9.4	9.4	.	.
Q27	15.7	23.2	7.7	7.7	6.5	42.8	13.8	17.8	10.9	10.9	3.0	8.8
Q28	13.0	20.5	1.6	18.0	6.5	42.2	15.6	20.7	10.9	10.9	3.4	11.5
Q29	19.6	26.2	11.2	11.2	7.6	58.5	20.5	23.7	15.9	15.9	4.1	16.5
Q30	9.7	9.7	9.7	9.7	.	.	9.3	9.3	9.3	9.3	.	.

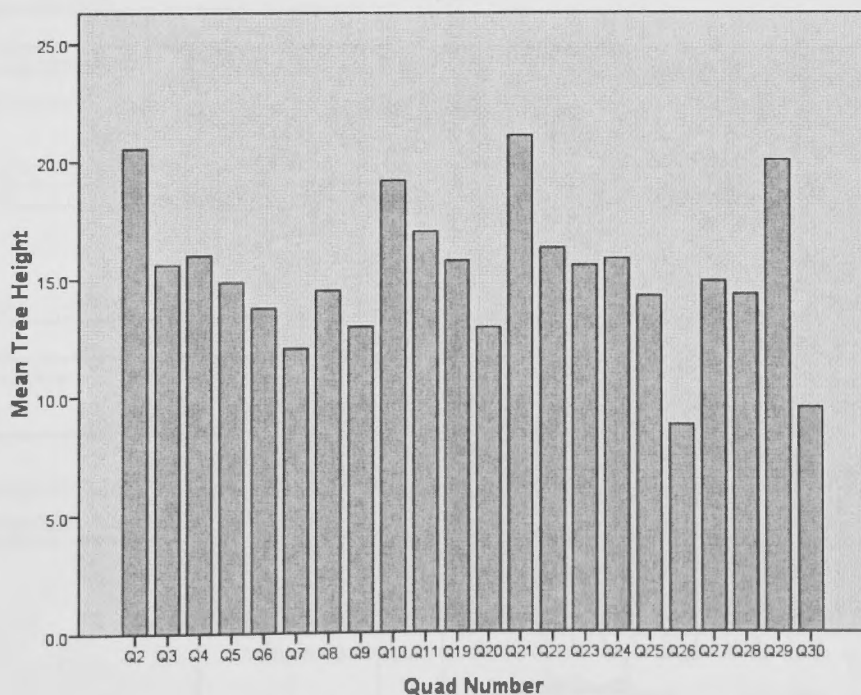


Figure 37 Mean tree height per quadrates on Tenagang Besar

Table 41 Basal area in each quadrat on the Tenagang Besar at the start of the study and at the end of the study. Mean, maximum, minimum, mode, standard deviation and variance in within the quadrat are listed for each.

Quad #	Month											
	Start						End					
	Mean	Max	Min	Mode	STD	Variance	Mean	Max	Min	Mode	STD	Variance
Q10	4.5	28.7	.7	1.3	6.5	42.7	4.6	31.1	.0	1.4	7.0	49.2
Q11	4.1	48.9	.7	1.3	7.7	59.9	5.4	54.0	.7	.8	10.2	104.7
Q19	5.5	57.2	.7	1.1	11.4	130.7	4.6	58.0	.0	1.0	10.8	116.2
Q2	7.8	58.0	.9	.9	13.4	180.1	10.4	83.0	.8	.9	18.6	344.2
Q20	3.8	66.0	.8	.8	10.6	113.0	4.4	68.5	.0	.9	11.2	125.9
Q21	4.1	19.4	.7	.8	3.9	15.5	4.9	20.9	.8	1.2	4.4	19.7
Q22	3.9	38.5	.7	.7	6.6	44.1	5.8	54.6	.7	.8	10.9	117.8
Q23	5.7	30.3	.7	.7	8.0	64.6	6.8	25.2	.0	.0	7.5	56.8
Q24	2.9	16.3	.7	.7	4.0	15.8	3.1	16.5	.0	1.0	4.4	19.3
Q25	2.3	17.2	.7	.7	3.6	12.6	2.5	17.3	.7	1.1	3.7	13.5
Q26	1.0	1.0	1.0	1.0	.	.	1.5	1.5	1.5	1.5	.	.
Q27	3.6	9.6	1.0	1.0	3.5	12.5	4.5	10.9	1.2	1.2	4.4	19.7
Q28	3.5	10.3	.8	1.0	3.2	10.2	3.9	11.3	1.0	1.0	3.4	11.8
Q29	3.9	6.4	2.2	2.2	2.2	4.8	5.1	9.3	2.8	2.8	3.6	13.1
Q3	2.7	12.2	.7	1.0	3.0	9.1	3.6	28.4	.7	1.0	5.1	25.6
Q30	.0	.0	.0	.0	.	.	1.3	1.3	1.3	1.3	.	.
Q4	3.4	42.1	.7	1.1	7.1	50.0	4.0	47.1	.8	1.1	8.5	73.1
Q5	3.2	28.7	.7	.8	6.5	41.8	3.3	26.1	.9	2.3	5.8	33.8
Q6	3.4	14.5	.7	1.1	3.6	12.7	3.5	14.5	.7	1.3	3.7	13.9
Q7	3.8	25.8	.7	.7	5.6	30.9	3.8	24.0	.6	.7	5.4	29.4
Q8	4.0	25.8	.7	.8	6.0	35.9	4.1	26.6	.7	1.1	6.2	38.6
Q9	2.6	14.1	.7	1.3	3.0	8.8	2.7	14.6	.8	.8	3.1	9.6

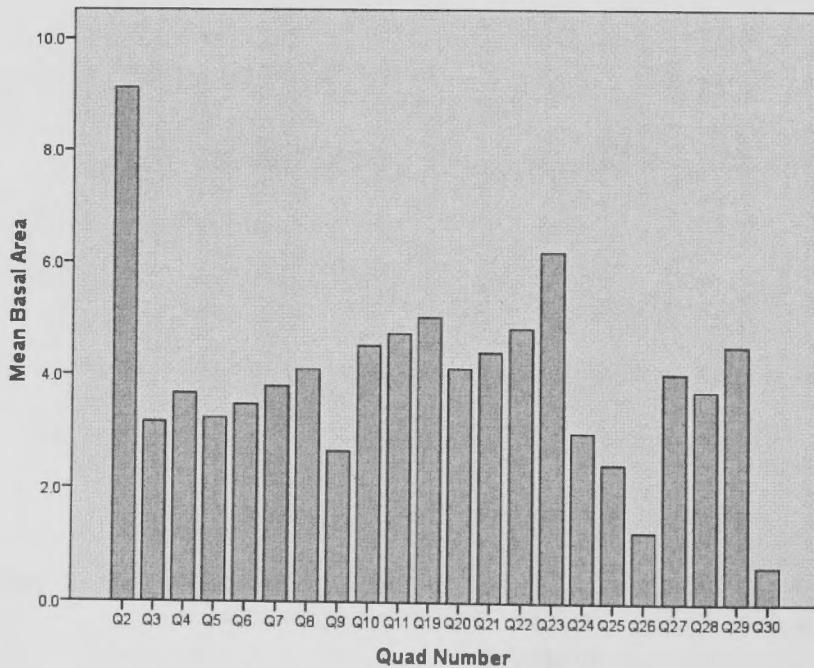


Figure 38 Mean basal area of quadrats on Tenagang Besar

Table 42 T-test between begin and end tree height and basal area.

Group Statistics

	Month	N	Mean	Std. Deviation	Std. Error Mean
Tree Height	Start	533	18.252	13.9692	.6051
	End	526	12.831	8.7975	.3836

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Tree Height	Equal variances assumed	31.682	.000	7.545	1057	.000	5.4210	.7185	4.0112	6.8308
	Equal variances not assumed			7.567	898.493	.000	5.4210	.7164	4.0149	6.8270

As the Lavene's test returned a positive significance a Mann-Whitney U was run.

Table 43 Mann Whitney U between begin and end for tree hight and basal area.

Ranks

	Month	N	Mean Rank	Sum of Ranks
Tree Height	Start	534	618.80	330441.50
	End	527	442.03	232949.50
	Total	1061		

Test Statisticsa

	Tree Height
Mann-Whitney U	93821.500
Wilcoxon W	232949.500
Z	-9.395
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: Month

Group Statistics

	Month	N	Mean	Std. Deviation	Std. Error Mean
Basal Area	Start	533	3.898	6.9722	.3020
	End	526	4.466	8.3706	.3650

Table 44 T-test for basal area between beginning and end.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Basal Area	Equal variances assumed	3.164	.076	-1.202	1057	.230	-.5686	.4732	-1.4970	.3598

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	3.164	.076	-1.202	1057	.230	-.5686	.4732	-1.4970	.3598
Equal variances not assumed			-1.200	1018.739	.230	-.5686	.4737	-1.4982	.3610

To ensure that the T-test was accurate a safer Mann-Whitney U was run.

Table 45 Mann Whitney U Basal area between beginning and end.

Ranks

	Month	N	Mean Rank	Sum of Ranks
Basal Area	Start	534	518.83	277056.00
	End	527	543.33	286335.00
	Total	1061		

Test Statisticsa

	Basal Area
Mann-Whitney U	134211.000
Wilcoxon W	277056.000
Z	-1.303
Asymp. Sig. (2-tailed)	.193

a. Grouping Variable: Month

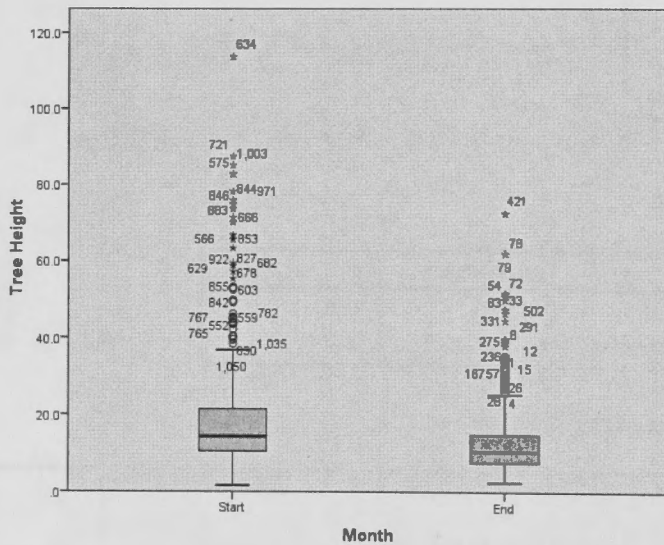


Figure 39 Box plot beginning to end tree height

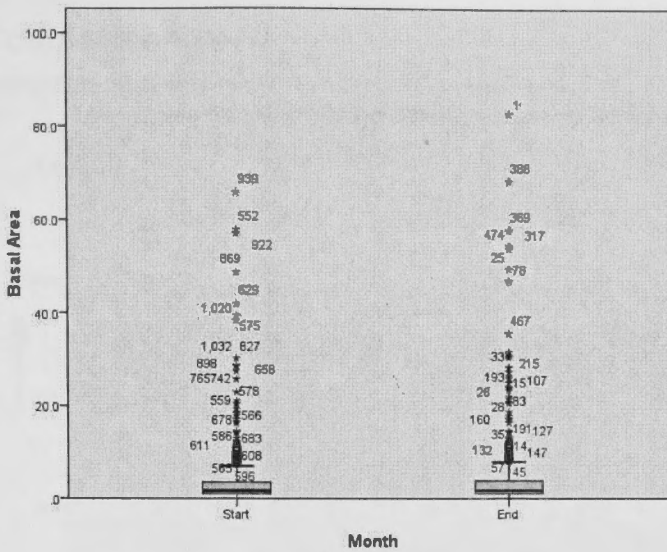


Figure 40 Box plot begin to end basal area

Table 46 Anova with bonferroni between tree heights.

Tests of Between-Subjects Effects

Dependent Variable: Tree Height

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4980.656a	19	262.140	3.708	.000
Intercept	55003.209	1	55003.209	778.080	.000
QuadNumber	4980.656	19	262.140	3.708	.000
Error	35628.239	504	70.691		
Total	127061.140	524			
Corrected Total	40608.895	523			

a. R Squared = .123 (Adjusted R Squared = .090)

Bonferroni found a significant difference between the following quadrats

The mean difference is significant at the 0.05 level.

Quad	Quad	Mean Difference	Std Error	Sig.
11	7	7.089	1.8933	.038
2	5	9.802	2.5584	.027
2	6	9.730	2.1405	.001
2	7	9.928	2.1162	.001
2	8	8.034	2.0941	.027
2	9	8.373	2.1818	.027
21	5	10.109	2.6722	.033
21	6	10.037	2.2753	.002
21	7	10.235	2.2524	.001
21	8	8.342	2.2317	.039
21	9	8.680	2.3142	.037



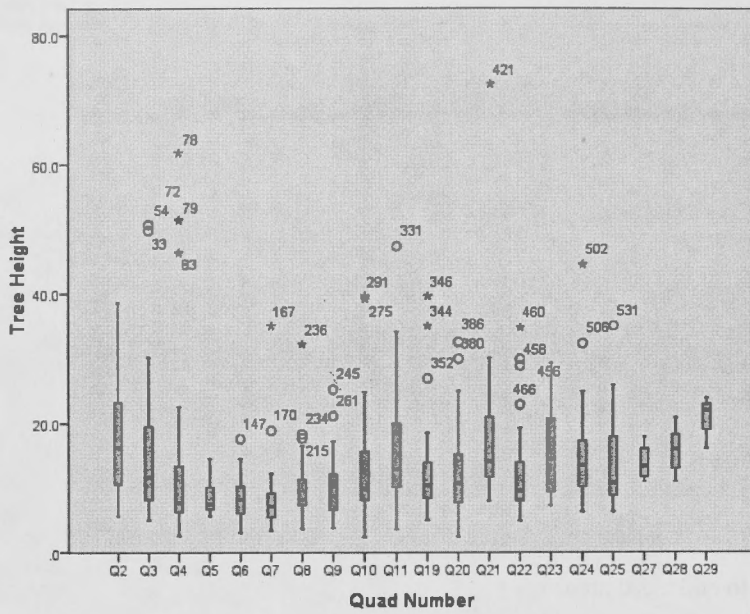


Figure 41 Box plot of tree height on Tenang Besar

Table 47 Anova with Bonferroni between basal area

Tests of Between-Subjects Effects

Dependent Variable: Basal Area

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1449.034a	19	76.265	1.088	.359
Intercept	6164.329	1	6164.329	87.969	.000
QuadNumber	1449.034	19	76.265	1.088	.359
Error	35317.089	504	70.074		
Total	47272.980	524			
Corrected Total	36766.123	523			

a. R Squared = .039 (Adjusted R Squared = .003)

There were no Bonferroni that were significant to the 0.05 level.

## Comparison between rivers

(using data from end of each river)

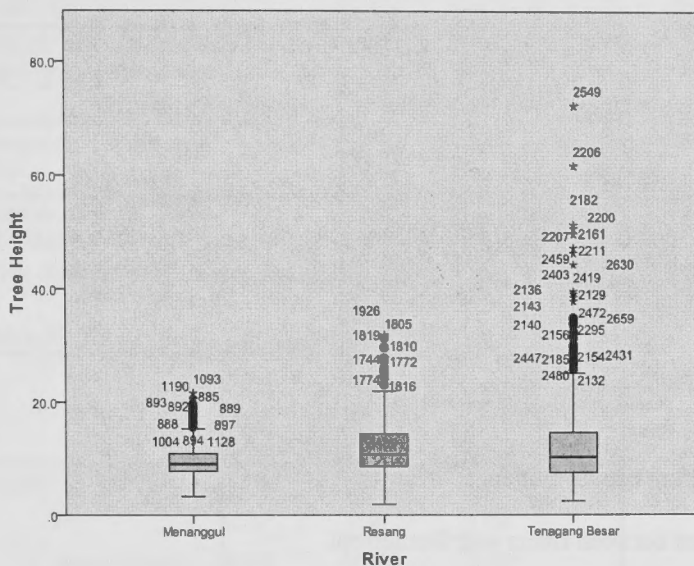


Figure 42 Boxplot of tree height between rivers

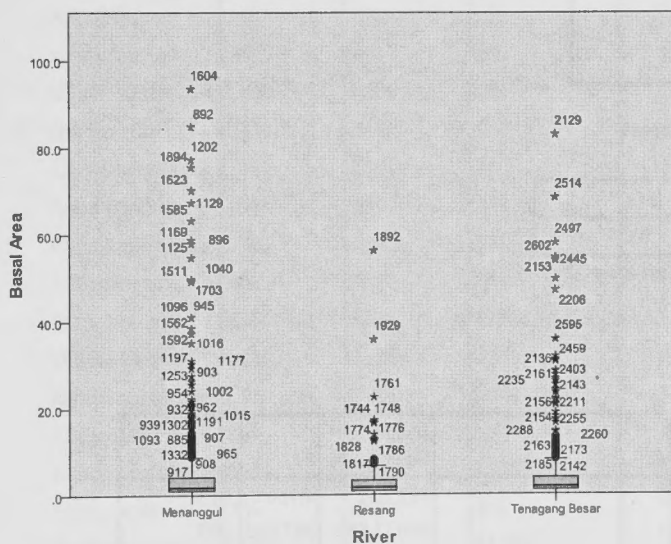


Figure 43 Box plot of basal area between rivers

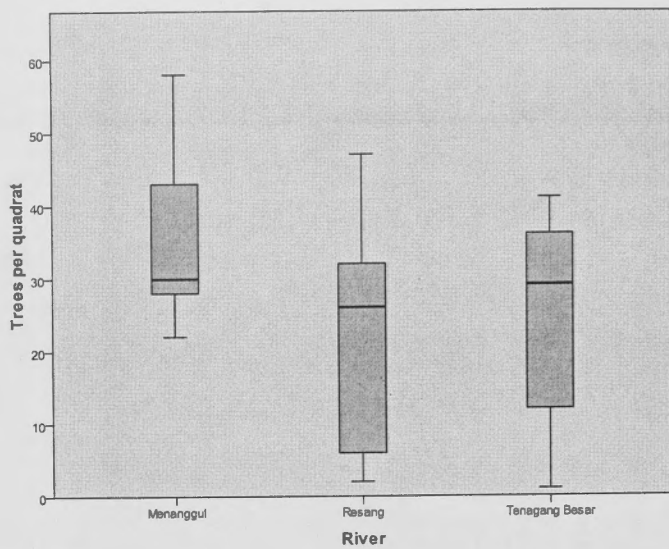


Figure 44 Total number of trees/km between rivers

Table 48 Anova trees per quadrat between rivers with Bonferroni  
Between-Subjects Factors

	Value Label	N
River 1.00	Menanggul	25
3.00	Resang	9
4.00	Tenagang Besar	22

Levene's Test of Equality of Error Variance  
Dependent Variable: Trees per quadrat

F	df1	df2	Sig.
3.586	2	53	.035

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + River

Tests of Between-Subjects Effects

Dependent Variable: Trees per quadrat

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1565.254 <sup>a</sup>	2	782.627	4.760	.013
Intercept	34037.880	1	34037.880	207.033	.000
River	1565.254	2	782.627	4.760	.013
Error	8713.603	53	164.408		
Total	56912.000	56			
Corrected Total	10278.857	55			

a. R Squared = .152 (Adjusted R Squared = .120)

Multiple Comparisons

Trees per quadrat

Bonferroni

(I) River	(J) River	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Menanggul	Resang	12.53*	4.984	.045	.21	24.85
	Tenagang Besar	9.59*	3.748	.040	.33	18.86
Resang	Menanggul	-12.53*	4.984	.045	-24.85	-.21

Levene's Test of Equality of Error Variance

Dependent Variable: Trees per quadrat

F	df1	df2	Sig.
3.586	2	53	.035

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

		Tenangang Besar	-2.93	5.074	1.000	-15.48	9.61
Tenangang Besar	Menanggul		-9.59*	3.748	.040	-18.86	-.33
	Resang		2.93	5.074	1.000	-9.61	15.48

Based on observed means.

The error term is Mean Square(Error) = 164.408.

\*. The mean difference is significant at the .05 level.

Table 49 Tree type by family percentagewise and then count.

Family	River		
	Menanggul	Resang	Tenangang Besar
	Column N %	Column N %	Column N %
?	1.7%	.0%	.2%
Anacardiaceae	4.6%	3.0%	1.3%
Annonaceae	.6%	1.5%	2.2%
APO?	.0%	2.0%	.0%
Apocynaceae	.1%	.0%	.2%
Aquifoliaceae	.9%	.0%	.0%
Bombacaceae	1.5%	1.5%	.0%
Burseraceae	1.3%	.5%	.2%
Chrysobalanaceae	.5%	1.0%	.5%
Combretaceae	.0%	.0%	.4%
Ctenolophonaceae	.2%	.0%	.0%
Datisceae	.0%	.5%	.0%
dead	.0%	3.0%	1.6%
Dilleniaceae	6.2%	2.5%	5.8%
Dipterocarpaceae	2.9%	4.0%	2.5%
Ebenaceae	3.6%	5.0%	3.4%
Elaeocarpaceae	2.2%	.5%	1.3%
Erythroxylaceae	.3%	.0%	.0%
Euphorbiaceae	19.9%	22.1%	22.7%
Flacourtiaceae	7.0%	2.0%	6.2%
Guttiferae	2.3%	2.5%	2.0%
Hypericaceae	1.8%	1.5%	.5%
Lauraceae	4.7%	3.5%	5.1%
Lecythidaceae	1.3%	.0%	.7%
Leguminoceae	.1%	.0%	.0%
Leguminosae	1.4%	.5%	1.3%
Lythraceae	.0%	.0%	.2%
Melastomataceae	5.5%	3.0%	2.7%
Meliaceae	.2%	.0%	.4%
missing	.0%	.5%	.0%
Moraceae	1.7%	1.5%	.7%

Myristicaceae	1.7%	1.5%	.9%
Myrsinaceae	.3%	.0%	.2%
Myrtaceae	6.0%	5.5%	3.3%
Ochnaceae	1.6%	1.0%	.0%
Oleaceae	.8%	.0%	1.1%
Polygalaceae	1.7%	1.0%	2.0%
Proteaceae	.3%	.5%	1.8%
Rhizophoraceae	.0%	.0%	.2%
Rubiaceae	3.3%	3.5%	5.8%
s	.1%	.0%	.0%
Sapindaceae	1.3%	.0%	.5%
Sapotaceae	1.8%	3.0%	1.1%
Saxifragaceae	.1%	.0%	.0%
Simaroubaceae	.0%	1.0%	.4%
Sterculiaceae	1.0%	2.5%	2.4%
Symplocaceae	.2%	.0%	.0%
Theaceae	.2%	.0%	.4%
Tiliaceae	2.4%	15.6%	8.9%
Verbenaceae	4.0%	2.5%	8.3%

Table 50 Number of trees of each family per river

Family	River		
	Menanggul	Resang	Tenangang Besar
Anacardiaceae	40	6	7
Annonaceae	5	3	12
APO?	0	4	0
Apocynaceae	1	0	1
Aquifoliaceae	8	0	0
Bombacaceae	13	3	0
Burseraceae	11	1	1
Chrysobalanaceae	4	2	3
Combretaceae	0	0	2
Ctenolophonaceae	2	0	0
Datisceae	0	1	0
dead	0	6	9
Dilleniaceae	54	5	32
Dipterocarpaceae	25	8	14
Ebenaceae	31	10	19
Elaeocarpaceae	19	1	7
Erythroxylaceae	3	0	0
Euphorbiaceae	172	44	125
Flacourtiaceae	61	4	34
Guttiferae	20	5	11
Hypericaceae	16	3	3
Lauraceae	41	7	28
Lecythidaceae	11	0	4
Leguminoceae	1	0	0
Leguminosae	12	1	7
Lythraceae	0	0	1
Melastomataceae	48	6	15
Meliaceae	2	0	2
missing	0	1	0
Moraceae	15	3	4
Myristicaceae	15	3	5
Myrsinaceae	3	0	1
Myrtaceae	52	11	18
Ochnaceae	14	2	0
Oleaceae	7	0	6
Polygalaceae	15	2	11
Proteaceae	3	1	10
Rhizophoraceae	0	0	1
Rubiaceae	29	7	32
s	1	0	0
Sapindaceae	11	0	3
Sapotaceae	16	6	6
Saxifragaceae	1	0	0
Simaroubaceae	0	2	2
Sterculiaceae	9	5	13
Symplocaceae	2	0	0
Theaceae	2	0	2
Tiliaceae	21	31	49
Verbenaceae	35	5	46

Table 51 Tree type by family then genus

Family	Genus	River					
		Menanggul		Resang		Tenang Besar	
		Layer Column Total N %	Count	Layer Column Total N %	Count	Layer Column Total N %	Count
		1.3%	11	.0%	0	.0%	0
	?	.0%	0	.0%	0	.2%	1
	Congcodistigm	.1%	1	.0%	0	.0%	0
	Kibara	.2%	2	.0%	0	.0%	0
	Scleropypum	.1%	1	.0%	0	.0%	0
?		.0%	0	.0%	0	.2%	1
	?	.0%	0	.0%	0	.5%	3
Anacardiaceae		.1%	1	.0%	0	.0%	0
	Androtrium	.8%	7	.5%	1	.0%	0
	Buchanania	1.6%	14	.5%	1	.2%	1
	Dracontomelon	.1%	1	.5%	1	.9%	5
	Gluta	.3%	3	.0%	0	.0%	0
	Mangifera	.0%	0	.5%	1	.2%	1
	Melanochyla	1.6%	14	1.0%	2	.0%	0
Annonaceae	Cananga	.2%	2	.5%	1	1.8%	10
	Oncodostigma	.2%	2	.0%	0	.0%	0
	Polyalthia	.1%	1	1.0%	2	.4%	2
APO?	Rauwolfia	.0%	0	2.0%	4	.0%	0
Apocynaceae	Kibatalia	.1%	1	.0%	0	.2%	1
Aquifoliaceae	Ilex	.9%	8	.0%	0	.0%	0
Bombacaceae	Durio	1.5%	13	1.5%	3	.0%	0
Burseraceae	Canarium	1.2%	10	.5%	1	.2%	1
	Dacryodes	.1%	1	.0%	0	.0%	0
Chrysobalanaceae	Atuna	.0%	0	.0%	0	.5%	3
	Licania	.1%	1	.0%	0	.0%	0
	Maranthes	.2%	2	.0%	0	.0%	0
	Parinari	.1%	1	1.0%	2	.0%	0
Combretaceae	Terminalia	.0%	0	.0%	0	.4%	2
Ctenolophonaceae	Ctenolophon	.2%	2	.0%	0	.0%	0
Datisceae	Octomeles	.0%	0	.5%	1	.0%	0
dead		.0%	0	3.0%	6	1.6%	9
Dilleniaceae	Dillenia	6.2%	54	2.5%	5	5.8%	32
Dipterocarpaceae	Dipterocarpus	.5%	4	.5%	1	.7%	4
	Hopea	1.4%	12	.0%	0	.0%	0
	Parashorea	.1%	1	.0%	0	.0%	0
	Vatica	.9%	8	3.5%	7	1.8%	10
Ebenaceae	Diospyros	3.6%	31	5.0%	10	3.4%	19
Elaeocarpaceae	Elaeocarpus	2.2%	19	.5%	1	1.3%	7
Erythroxylaceae	Erythroxylum	.3%	3	.0%	0	.0%	0
Euphorbiaceae	Antidesma	2.0%	17	.5%	1	.9%	5
	Aporusa	4.4%	38	3.5%	7	.4%	2
	Baccaurea	.9%	8	1.0%	2	2.5%	14
	Bridelia	.7%	6	.0%	0	.4%	2
	Cleistanthus	.2%	2	.5%	1	.2%	1
	Croton	3.7%	32	9.5%	19	11.3%	62
	Drypetes	.0%	0	.0%	0	1.1%	6
	Excoecaria	2.2%	19	2.0%	4	2.3%	13
	Glochidion	.3%	3	1.5%	3	1.8%	10

	Macaranga	1.2%	10	1.0%	2	.0%	0
	Mallotus	1.6%	14	1.0%	2	1.8%	10
	Neoscortechin	.0%	0	.5%	1	.0%	0
	Paracorton	2.7%	23	1.0%	2	.0%	0
Flacourtiaceae	flacourtia	.0%	0	.0%	0	1.3%	7
	Flacourtia	2.8%	24	.5%	1	.7%	4
	Hydnocarpus	4.0%	35	1.5%	3	4.2%	23
	Ryparosa	.2%	2	.0%	0	.0%	0
Guttiferae	Garcinia	1.6%	14	2.0%	4	1.1%	6
	Mesua	.7%	6	.5%	1	.9%	5
Hypericaceae	Cratoxylum	1.8%	16	1.5%	3	.5%	3
Lauraceae		.1%	1	.0%	0	.0%	0
	Cinnamomum	.1%	1	.0%	0	.2%	1
	Cryptocarya	1.8%	16	.0%	0	1.6%	9
	Dehassia	.8%	7	.0%	0	.0%	0
	Endiandra	1.4%	12	1.5%	3	2.4%	13
	Litsea	.5%	4	1.5%	3	.4%	2
	Nothaphoebe	.0%	0	.5%	1	.5%	3
Lecythidaceae	Barringtonia	1.2%	10	.0%	0	.7%	4
	Planchonia	.1%	1	.0%	0	.0%	0
Leguminoceae	Spatholobus	.1%	1	.0%	0	.0%	0
Leguminosae	Archidendron	.0%	0	.5%	1	.0%	0
	Crudia	.0%	0	.0%	0	.5%	3
	Cynometra	.0%	0	.0%	0	.4%	2
	Dialium	.3%	3	.0%	0	.2%	1
	Koompassia	.1%	1	.0%	0	.0%	0
	Ormosia	.1%	1	.0%	0	.0%	0
	Parkia	.1%	1	.0%	0	.2%	1
	Sindora	.7%	6	.0%	0	.0%	0
Lythraceae	Lagerstroemia	.0%	0	.0%	0	.2%	1
Melastomataceae	Memecylon	2.3%	20	2.5%	5	2.2%	12
	Pternandra	3.2%	28	.5%	1	.5%	3
Meliaceae	Aglaia	.0%	0	.0%	0	.2%	1
	Dysoxylum	.1%	1	.0%	0	.2%	1
	Walsura	.1%	1	.0%	0	.0%	0
missing		.0%	0	.5%	1	.0%	0
Moraceae	Artocarpus	.8%	7	.5%	1	.0%	0
	Ficus	.8%	7	1.0%	2	.7%	4
	Prainea	.1%	1	.0%	0	.0%	0
Myristicaceae	Knema	1.7%	15	1.5%	3	.9%	5
Myrsinaceae	Ardisia	.3%	3	.0%	0	.2%	1
Myrtaceae	Eugenia	6.0%	52	5.5%	11	3.3%	18
Ochnaceae	Gomphia	1.6%	14	1.0%	2	.0%	0
Oleaceae	Chionanthus	.8%	7	.0%	0	1.1%	6
Polygalaceae	Xanthophyllum	1.7%	15	1.0%	2	2.0%	11
Proteaceae	Helicia	.3%	3	.5%	1	1.8%	10
Rhizophoraceae	Carallia	.0%	0	.0%	0	.2%	1
Rubiaceae		.3%	3	.0%	0	.0%	0
	Gardenia	.7%	6	.0%	0	.5%	3
	Ludekia	.0%	0	1.0%	2	.0%	0
	mitrogyma	.0%	0	.0%	0	.2%	1
	Nauclea	1.6%	14	2.5%	5	2.7%	15
	Neolamarckia	.0%	0	.0%	0	.5%	3
	Pleiocarpidia	.7%	6	.0%	0	1.8%	10



s	Scleropyum	.1%	1	.0%	0	.0%	0
Sapindaceae	Dimocarpus	.3%	3	.0%	0	.0%	0
	Mischorcerpus	.5%	4	.0%	0	.5%	3
	Nephelium	.5%	4	.0%	0	.0%	0
Sapotaceae	Madhuca	1.5%	13	2.5%	5	.9%	5
	Palaquium	.2%	2	.5%	1	.2%	1
	Pouteria	.1%	1	.0%	0	.0%	0
Saxifragaceae	Polyosma	.1%	1	.0%	0	.0%	0
Simaroubaceae	Quassia	.0%	0	1.0%	2	.4%	2
Sterculiaceae	Heritiera	.5%	4	.5%	1	.0%	0
	Kleinhovia	.0%	0	.5%	1	.2%	1
	Pterospermum	.6%	5	1.5%	3	2.2%	12
Symplocaceae	Symplocos	.2%	2	.0%	0	.0%	0
Theaceae		.1%	1	.0%	0	.0%	0
	?	.0%	0	.0%	0	.4%	2
	Ternstroemia	.1%	1	.0%	0	.0%	0
Tiliaceae	Colona	.7%	6	14.6%	29	6.7%	37
	Microcos	1.7%	15	1.0%	2	2.2%	12
Verbenaceae	Teijsmanniodes	.6%	5	.0%	0	1.5%	8
	Vitex	3.5%	30	2.5%	5	6.9%	38

Table 52 Anova with post hoc HSO and Bonferroni between rivers for tree height  
Between-Subjects Factors

	Value Label	N
River 1	Menanggul	834
3	Resang	182
4	Tenagang Besar	527

Tests of Between-Subjects Effects  
Dependent Variable: Tree Height

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3747.696a	2	1873.848	54.703	.000
Intercept	141467.825	1	141467.825	4129.854	.000
River	3747.696	2	1873.848	54.703	.000
Error	52752.577	1540	34.255		
Total	244426.270	1543			
Corrected Total	56500.274	1542			

a. R Squared = .066 (Adjusted R Squared = .065)

Multiple Comparisons

Tree Height  
Bonferroni

(I) River	(J) River	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Menanggul	Resang	-2.837*	.4788	.000	-3.985	-1.690
	Tenagang Besar	-3.216*	.3257	.000	-3.997	-2.436
Resang	Menanggul	2.837*	.4788	.000	1.690	3.985
	Tenagang Besar	-.379	.5032	1.000	-1.585	.827
Tenagang Besar	Menanggul	3.216*	.3257	.000	2.436	3.997
	Resang	.379	.5032	1.000	-.827	1.585

Based on observed means.

The error term is Mean Square(Error) = 34.255.

\*. The mean difference is significant at the 0.05 level.

Table 53 Anova with post hoc HSO and Bonferroni between rivers for basal area  
Between-Subjects Factors

	Value Label	N
River 1	Menanggul	857
3	Resang	189
4	Tenagang Besar	550

Tests of Between-Subjects Effects

Dependent Variable: Basal Area

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	291.248a	2	145.624	1.980	.138
Intercept	18483.943	1	18483.943	251.383	.000
River	291.248	2	145.624	1.980	.138
Error	117131.796	1593	73.529		
Total	148469.620	1596			
Corrected Total	117423.043	1595			

a. R Squared = .002 (Adjusted R Squared = .001)

Multiple Comparisons

Basal Area

Bonferroni

(I) River	(J) River	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Menanggul	Resang	1.358	.6891	.147	-.293	3.010
	Tenagang Besar	.369	.4685	1.000	-.754	1.492
Resang	Menanggul	-1.358	.6891	.147	-3.010	.293
	Tenagang Besar	-.989	.7230	.514	-2.722	.743
Tenagang Besar	Menanggul	-.369	.4685	1.000	-1.492	.754
	Resang	.989	.7230	.514	-.743	2.722

Based on observed means.

The error term is Mean Square(Error) = 73.529.

Table 54 GBH averaged from all trees at end of study for each river.

	GBH (cm)					
	Mean	Median	Mode	Minimum	Maximum	Standard Deviation
River Menanggul	67	49	34	30	597	55
Resang	61	47	30	30	425	49
Tenagang Besar	63	48	40	30	376	43

\*This excludes those trees which were broken or killed during the study.

Table 55 Tree Height from all trees at end of study.

	Tree Height				
	Mean	Maximum	Median	Mode	Standard Deviation
River Menanggul	9.6	21.6	9.1	8.5	2.7
Resang	12.4	31.9	10.8	11.0	5.8
Tenagang Besar	12.8	72.4	10.3	7.4	8.8

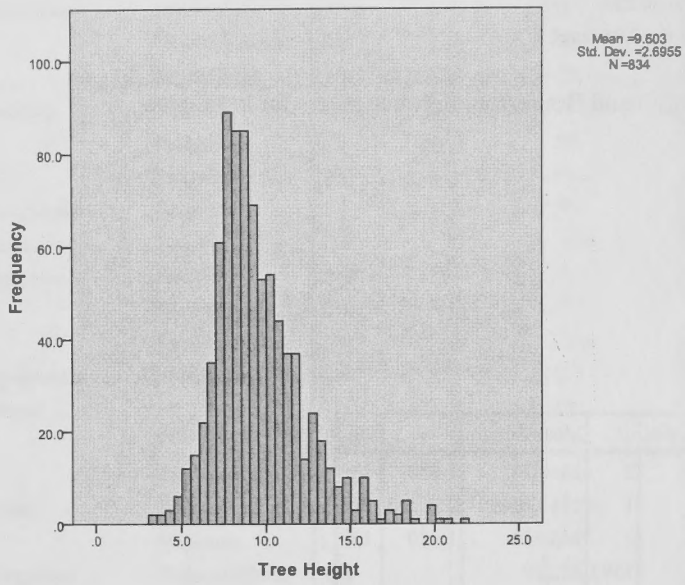


Figure 45 Menanggul tree heights.

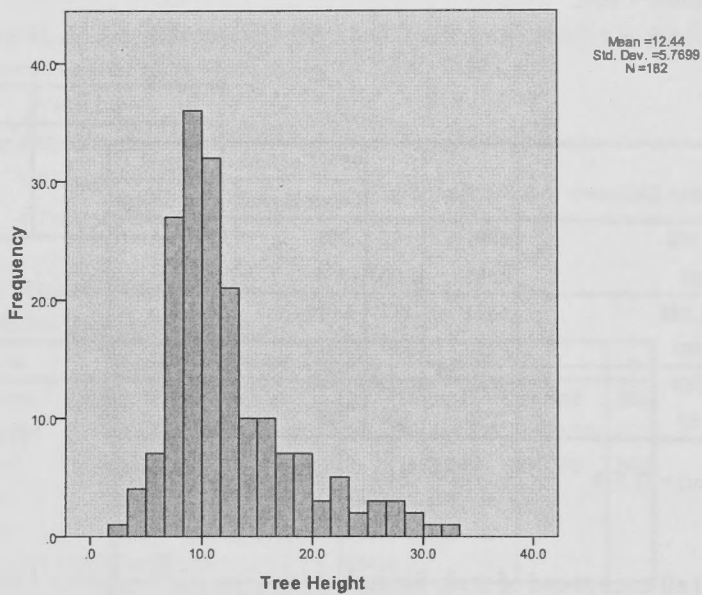


Figure 46 Resang tree heights.

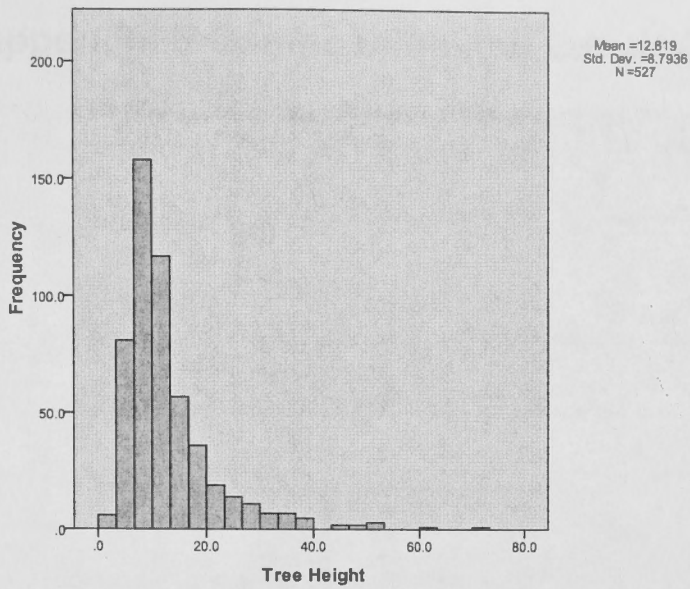


Figure 47 Tenagang Besar tree heights.

The rivers are different in their trees per quad (or amount of trees along the river having regrowth or beign logged to different rates) The basal area is the same thus all the trees are around the same age if growth rings are similar. The heights are different and the family make up of the rivers is diffenent allowing for the differning heights.

Quad	Tree Height	Frequency
1	0	5
1	5	80
1	10	160
1	15	115
1	20	55
1	25	35
1	30	20
1	35	15
1	40	10
1	45	5
1	50	3
1	55	2
1	60	1
1	65	1
1	70	1
1	75	1
1	80	1

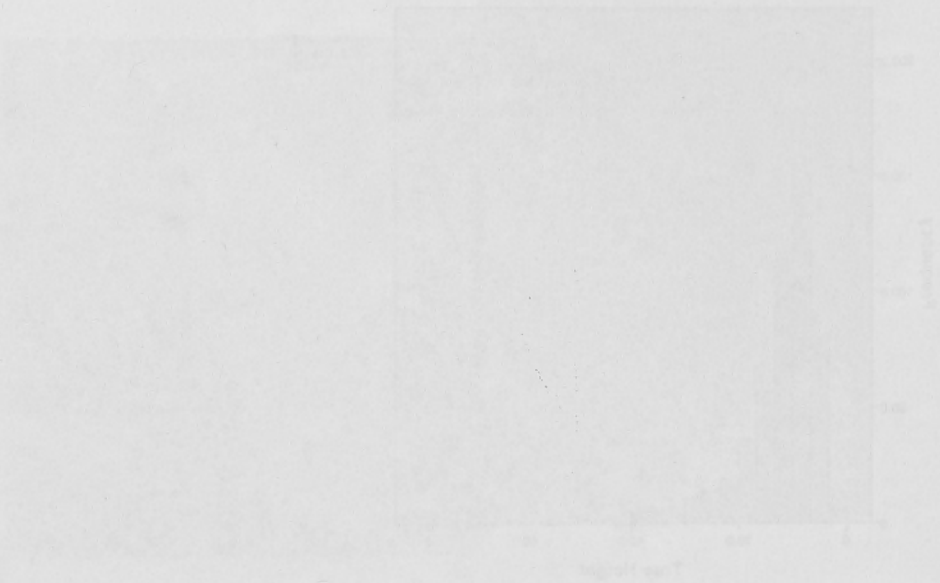


Figure 4: Lumber Price Index

The figure shows that the lumber price index has increased significantly over the period from 1980 to 1990. The index starts at a low point in 1980 and shows a steady upward trend, reaching a much higher level by 1990. This indicates a substantial increase in the price of lumber over this decade.

# Appendix E Composition and Density

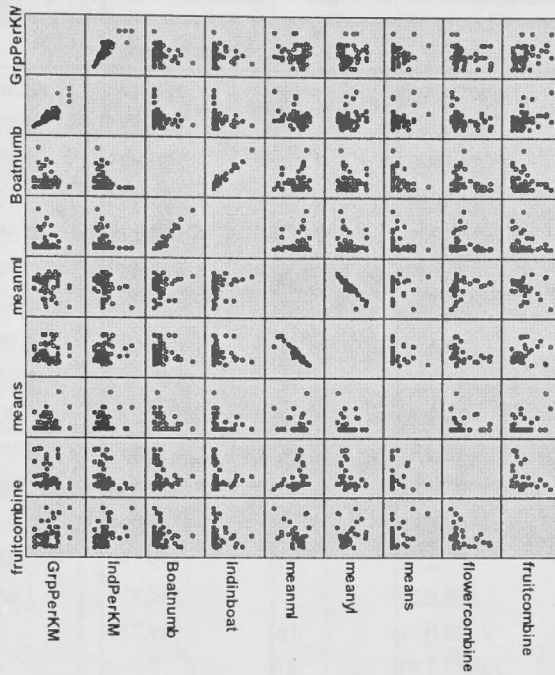


Table 1 Univariate Analysis of Variance full starting model for individual proboscis monkeys per kilometer surveyed followed by final model.

### Between-Subjects Factors

		N
season	flooding	19
	normal	38
river	Menanggul	22
	Sg. Resang	17
	Tenagang Besar	18
Censcode	Morning	24
	Night	33

Tests of Between-Subjects Effects

Dependent Variable: IndPerKM

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4487.945 <sup>a</sup>	16	280.497	2.567	.008
Intercept	318.223	1	318.223	2.913	.096
season	200.875	1	200.875	1.839	.183
river	117.190	2	58.595	.536	.589
Censcode	262.119	1	262.119	2.399	.129
Boatnumb	426.453	1	426.453	3.903	.055
Indinboat	158.348	1	158.348	1.449	.236
meanml	195.631	1	195.631	1.791	.188
meanyl	142.322	1	142.322	1.303	.261
means	24.272	1	24.272	.222	.640
flowercombine	442.411	1	442.411	4.049	.051
fruitcombine	.159	1	.159	.001	.970
river * Censcode	48.031	2	24.016	.220	.804
season * Censcode	99.192	1	99.192	.908	.346
season * river	369.023	2	184.511	1.689	.198
Error	4370.074	40	109.252		
Total	23822.120	57			
Corrected Total	8858.019	56			

a. R Squared = .507 (Adjusted R Squared = .309)

Final model

Warnings

dimension0	1	The following factors or covariates are not used in the model: season, Censcode, Boatnumb, Indinboat, meanml, meanyl, means, fruitcombine
------------	---	---

Between-Subjects Factors

		N
season	flooding	19
	normal	38
river	Menanggul	22
	Sg. Resang	17
	Tenagang Besar	18
Censcode	Morning	24
	Night	33

Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2542.439 <sup>a</sup>	3	847.480	7.112	.000
Intercept	13181.358	1	13181.358	110.617	.000
river	1764.948	2	882.474	7.406	.001
flowercombine	1609.593	1	1609.593	13.508	.001
Error	6315.579	53	119.162		
Total	23822.120	57			
Corrected Total	8858.019	56			

a. R Squared = .287 (Adjusted R Squared = .247)

Tests of Model Effects

Source	Type III		
	Wald Chi-Square	df	Sig.
(Intercept)	131.388	1	.000
river	17.094	2	.000
flowercombine	13.513	1	.000

Dependent Variable: IndPerKM

Model: (Intercept), river, flowercombine

Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	19.303	2.4887	14.425	24.181	60.162	1	.000
[river=Menanggul ]	-3.766	3.0145	-9.675	2.142	1.561	1	.212
[river= Resang ]	9.957	3.2815	3.526	16.389	9.207	1	.002
[river=Tenagang Besar]	0 <sup>a</sup>	.	.	.	.	.	.
flowercombine	-2.665	.7249	-4.086	-1.244	13.513	1	.000
(Scale)	104.142 <sup>b</sup>	18.2678	73.844	146.872			

Dependent Variable: IndPerKM

Model: (Intercept), river, flowercombine

a. Set to zero because this parameter is redundant.

b. Maximum likelihood estimate.

Table 2 Univariate Analysis of Variance full starting model for groups of proboscis monkeys per kilometer surveyed followed by final model.

Between-Subjects Factors

		N
season	flooding	19
	normal	38
river	Menanggul	22
	Sg. Resang	17
	Tenagang Besar	18
Censcode	Morning	24
	Night	33



Tests of Between-Subjects Effects

Dependent Variable : GrpPerKM

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	18.084 <sup>a</sup>	16	1.130	2.454	.011
Intercept	.278	1	.278	.604	.442
season	2.073	1	2.073	4.501	.040
river	1.069	2	.535	1.161	.324
Censcode	.082	1	.082	.179	.675
Boatnumb	1.151	1	1.151	2.500	.122
Indinboat	.202	1	.202	.438	.512
meanml	.033	1	.033	.071	.791
meanyl	.129	1	.129	.281	.599
means	.022	1	.022	.048	.828
flowercombine	2.039	1	2.039	4.428	.042
fruitcombine	.014	1	.014	.031	.861
river * Censcode	1.566	2	.783	1.700	.196
season * Censcode	.886	1	.886	1.923	.173
season * river	1.044	2	.522	1.134	.332
Error	18.422	40	.461		
Total	136.085	57			
Corrected Total	36.507	56			

a. R Squared = .495 (Adjusted R Squared = .294)

Final Model

Warnings

dimension0 1	The following factors or covariates are not used in the model: Boatnumb, Indinboat, meanml, meanyl, means, fruitcombine
--------------	---

Between-Subjects Factors

		N
season	flooding	19
	normal	38
river	Menanggul	22
	Sg. Resang	17
	Tenagang Besar	18
Censcode	Morning	24
	Night	33

Tests of Between-Subjects Effects

Dependent Variable : GrpPerKM

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	13.504 <sup>a</sup>	6	2.251	4.892	.001
Intercept	64.450	1	64.450	140.087	.000
season	1.861	1	1.861	4.045	.050
river	6.777	2	3.388	7.365	.002
Censcode	.900	1	.900	1.956	.168
flowercombine	4.974	1	4.974	10.811	.002
season * Censcode	2.368	1	2.368	5.146	.028

## Warnings

Error	23.003	50	.460		
Total	136.085	57			
Corrected Total	36.507	56			

a. R Squared = .370 (Adjusted R Squared = .294)

## Estimates

Dependent Variable : GrpPerKM

season	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
flooding	1.117 <sup>a</sup>	.162	.793	1.442
normal	1.514 <sup>a</sup>	.112	1.289	1.740

a. Covariates appearing in the model are evaluated at the following values:  
flowercombine = 1.8703.

## Pairwise Comparisons

Dependent Variable: GrpPerKM

(I) season	(J) season	Mean Difference (I-J)	Std. Error	Sig. <sup>a</sup>	95% Confidence Interval for Difference <sup>a</sup>	
					Lower Bound	Upper Bound
flooding	normal	-.397*	.197	.050	-.793	.000
normal	flooding	.397*	.197	.050	.001	.793

Based on estimated marginal means

\*. The mean difference is significant at the .05 level.

a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

## Univariate Tests

Dependent Variable: GrpPerKM

	Sum of Squares	df	Mean Square	F	Sig.
Contrast	1.861	1	1.861	4.045	.050
Error	23.003	50	.460		

The F tests the effect of season. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

## Estimates

Dependent Variable: GrpPerKM

river	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Menanggul	.952 <sup>a</sup>	.157	.636	1.267
Sg. Resang	1.828 <sup>a</sup>	.172	1.484	2.173
Tenagang Besar	1.167 <sup>a</sup>	.167	.833	1.502

a. Covariates appearing in the model are evaluated at the following values: flowercombine = 1.8703.

Pairwise Comparisons

Dependent Variable:GrpPerKM

(I) river	(J) river	Mean Difference (I-J)	Std. Error	Sig. <sup>a</sup>	95% Confidence Interval for Difference <sup>a</sup>	
					Lower Bound	Upper Bound
Menanggul	Sg. Resang	-.877*	.234	.000	-1.348	-.406
	Tenangang Besar	-.216	.220	.333	-.659	.227
Sg. Resang	Menanggul	.877*	.234	.000	.406	1.348
	Tenangang Besar	.661*	.235	.007	.189	1.133
Tenangang Besar	Menanggul	.216	.220	.333	-.227	.659
	Sg. Resang	-.661*	.235	.007	-1.133	-.189

Based on estimated marginal means

\*. The mean difference is significant at the .05 level.

a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Univariate Tests

Dependent Variable:GrpPerKM

	Sum of Squares	df	Mean Square	F	Sig.
Contrast	6.777	2	3.388	7.365	.002
Error	23.003	50	.460		

The F tests the effect of river. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

3. Censcode \* season

Dependent Variable:GrpPerKM

Censcode	season	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Morning	flooding	1.478 <sup>a</sup>	.257	.961	1.994
	normal	1.429 <sup>a</sup>	.167	1.094	1.764
Night	flooding	.757 <sup>a</sup>	.196	.363	1.151
	normal	1.599 <sup>a</sup>	.149	1.299	1.899

a. Covariates appearing in the model are evaluated at the following values: flowercombine = 1.8703.

Table 3 Poisson Regression Model full starting model for OMG surveyed followed by final model.

Model Information

Dependent Variable	omg
Probability Distribution	Poisson
Link Function	Log
Offset Variable	lnrl

Case Processing Summary

	N	Percent
Included	59	71.1%
Excluded	24	28.9%
Total	83	100.0%

Categorical Variable Information

			N	Percent
Factor	season	flooding	19	32.2%
		normal	40	67.8%
		Total	59	100.0%
	river	Menanggul	22	37.3%
		Sg. Resang	19	32.2%
		Tenagang Besar	18	30.5%
		Total	59	100.0%
	Censcode	Morning	25	42.4%
		Night	34	57.6%
		Total	59	100.0%

Continuous Variable Information

		N	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable	omg	59	0	8	2.56	2.019
Covariate	Boatnumb	59	.00	13.00	2.1186	2.69152
	Indinboat	59	.00	91.00	11.0339	19.29531
	meanml	59	60.61	94.02	81.9685	8.46371
	meanyl	59	3.94	31.94	14.7021	7.94917
	means	59	.00	2.02	.1170	.36739
	flowercombine	59	.00	6.56	1.8480	1.93052
	fruitcombine	59	.13	3.86	1.3487	.99860
Offset	lnrl	59	5.99	8.55	7.8091	.75952

Goodness of Fit<sup>d</sup>

	Value	df	Value/df
Deviance	43.178	42	1.028
Scaled Deviance	42.000	42	
Pearson Chi-Square	36.421	42	.867
Scaled Pearson Chi-Square	35.427	42	
Log Likelihood <sup>a,b</sup>	-92.438		
Adjusted Log Likelihood <sup>c</sup>	-89.916		
Akaike's Information Criterion (AIC)	218.876		
Finite Sample Corrected AIC (AICC)	233.803		
Bayesian Information Criterion (BIC)	254.194		
Consistent AIC (CAIC)	271.194		

Dependent Variable: omg

Model: (Intercept), season, river, Censcode, Boatnumb, Indinboat, meanml, meanyl, means, flowercombine, fruitcombine, season \* river, season \* Censcode, river \* Censcode, offset = lnrl

a. The full log likelihood function is displayed and used in computing information criteria.

b. The log likelihood is based on a scale parameter fixed at 1.

c. The adjusted log likelihood is based on an estimated scale parameter and is used in the model fitting omnibus test.

d. Information criteria are in small-is-better form.

Omnibus Test<sup>a</sup>

Likelihood Ratio Chi-Square	df	Sig.
41.724	16	.000

Dependent Variable: omg

Model: (Intercept), season, river, Censcode, Boatnumb, Indinboat, meanml, meanyl, means, flowercombine, fruitcombine, season \* river, season \* Censcode, river \* Censcode, offset = lnrl

a. Compares the fitted model against the intercept-only model.

Tests of Model Effects

Source	Type III		
	Wald Chi-Square	df	Sig.
(Intercept)	2.940	1	.086
season	7.589	1	.006
river	4.884	2	.087
Censcode	.013	1	.909
Boatnumb	3.974	1	.046
Indinboat	2.407	1	.121
meanml	.073	1	.787
meanyl	.054	1	.816
means	1.463	1	.227
flowercombine	2.303	1	.129
fruitcombine	.108	1	.743
season * river	3.974	2	.137
season * Censcode	.000	1	.984
river * Censcode	1.757	2	.415

Dependent Variable: omg

Model: (Intercept), season, river, Censcode, Boatnumb, Indinboat, meanml, meanyl, means, flowercombine, fruitcombine, season \* river, season \* Censcode, river \* Censcode, offset = lnrl

Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	-5.360	3.4772	-12.176	1.455	2.377	1	.123
[season=flooding]	-1.442	.5490	-2.518	-.366	6.895	1	.009
[season=normal ]	0 <sup>a</sup>	.	.	.	.	.	.
[river=Menanggul ]	-.046	.3901	-.810	.719	.014	1	.907
[river=Sg. Resang ]	-.139	.5098	-1.138	.860	.075	1	.785
[river=Tenagang Besar]	0 <sup>a</sup>	.	.	.	.	.	.
[Censcode=Morning]	-.208	.3545	-.903	.487	.344	1	.558
[Censcode=Night ]	0 <sup>a</sup>	.	.	.	.	.	.
Boatnumb	-.295	.1480	-.585	-.005	3.974	1	.046
Indinboat	.033	.0210	-.009	.074	2.407	1	.121
meanml	-.010	.0353	-.079	.060	.073	1	.787
meanyl	-.008	.0354	-.078	.061	.054	1	.816
means	.433	.3582	-.269	1.135	1.463	1	.227
flowercombine	-.141	.0926	-.322	.041	2.303	1	.129
fruitcombine	-.043	.1323	-.303	.216	.108	1	.743
[season=flooding] * [river=Menanggul ]	.568	.6139	-.635	1.772	.857	1	.354
[season=flooding] * [river=Sg. Resang ]	1.375	.6976	.007	2.742	3.883	1	.049

[season=flooding] * [river=Tenagang Besar]	0 <sup>a</sup>						
[season=normal ] * [river=Menanggul ]	0 <sup>a</sup>						
[season=normal ] * [river=Sg. Resang ]	0 <sup>a</sup>						
[season=normal ] * [river=Tenagang Besar]	0 <sup>a</sup>						
[season=flooding] * [Censcode=Morning]	-0.009	.4759	-.942	.923	.000	1	.984
[season=flooding] * [Censcode=Night ]	0 <sup>a</sup>						
[season=normal ] * [Censcode=Morning]	0 <sup>a</sup>						
[season=normal ] * [Censcode=Night ]	0 <sup>a</sup>						
[river=Menanggul ] * [Censcode=Morning]	-.075	.4750	-1.006	.856	.025	1	.875
[river=Menanggul ] * [Censcode=Night ]	0 <sup>a</sup>						
[river=Sg. Resang ] * [Censcode=Morning]	.621	.5643	-.485	1.727	1.212	1	.271
[river=Sg. Resang ] * [Censcode=Night ]	0 <sup>a</sup>						
[river=Tenagang Besar] * [Censcode=Morning]	0 <sup>a</sup>						
[river=Tenagang Besar] * [Censcode=Night ]	0 <sup>a</sup>						
(Scale)	1.028 <sup>b</sup>						

Dependent Variable: omg

Model: (Intercept), season, river, Censcode, Boatnumb, Indinboat, meanml, meanyl, means, flowercombine, fruitcombine, season \* river, season \* Censcode, river \* Censcode, offset = lnrl

a. Set to zero because this parameter is redundant.

b. Computed based on the deviance.

### Final model

#### Model Information

Dependent Variable	omg
Probability Distribution	Poisson
Link Function	Log
Offset Variable	lnrl

#### Case Processing Summary

	N	Percent
Included	59	71.1%
Excluded	24	28.9%
Total	83	100.0%

#### Categorical Variable Information

			N	Percent
Factor	season	normal	40	67.8%
		flooding	19	32.2%
		Total	59	100.0%
	river	Tenagang Besar	18	30.5%
		Sg. Resang	19	32.2%
		Menanggul	22	37.3%

	Total	59	100.0%
Censcode	Night	34	57.6%
	Morning	25	42.4%
	Total	59	100.0%

Continuous Variable Information

		N	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable	omg	59	0	8	2.56	2.019
Covariate	Boatnumb	59	.00	13.00	2.1186	2.69152
	Indinboat	59	.00	91.00	11.0339	19.29531
	meanml	59	60.61	94.02	81.9685	8.46371
	meanyl	59	3.94	31.94	14.7021	7.94917
	means	59	.00	2.02	.1170	.36739
	flowercombine	59	.00	6.56	1.8480	1.93052
	fruitcombine	59	.13	3.86	1.3487	.99860
Offset	lnrl	59	5.99	8.55	7.8091	.75952

Goodness of Fit<sup>d</sup>

	Value	df	Value/df
Deviance	54.809	54	1.015
Scaled Deviance	54.000	54	
Pearson Chi-Square	49.748	54	.921
Scaled Pearson Chi-Square	49.014	54	
Log Likelihood <sup>a,b</sup>	-98.253		
Adjusted Log Likelihood <sup>c</sup>	-96.804		
Akaike's Information Criterion (AIC)	206.506		
Finite Sample Corrected AIC (AICC)	207.639		
Bayesian Information Criterion (BIC)	216.894		
Consistent AIC (CAIC)	221.894		

Dependent Variable: omg

Model: (Intercept), season, river, flowercombine, offset = lnrl

- The full log likelihood function is displayed and used in computing information criteria.
- The log likelihood is based on a scale parameter fixed at 1.
- The adjusted log likelihood is based on an estimated scale parameter and is used in the model fitting omnibus test.
- Information criteria are in small-is-better form.

Omnibus Test<sup>a</sup>

Likelihood Ratio Chi-Square	df	Sig.
30.802	4	.000

Dependent Variable: omg

Model: (Intercept), season, river, flowercombine, offset = lnrl

- Compares the fitted model against the intercept-only model.

Tests of Model Effects

Source	Type III		
	Wald Chi-Square	df	Sig.

(Intercept)	2141.726	1	.000
season	13.868	1	.000
river	14.339	2	.001
flowercombine	6.514	1	.011

Dependent Variable: omg

Model: (Intercept), season, river, flowercombine, offset = lnrl

Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	-7.580	.2259	-8.023	-7.137	1125.938	1	.000
[season=normal ]	.813	.2184	.385	1.242	13.868	1	.000
[season=flooding]	0 <sup>a</sup>	.	.	.	.	.	.
[river=Tenagang Besar]	-.005	.1908	-.379	.369	.001	1	.978
[river=Sg. Resang ]	.868	.2394	.399	1.337	13.139	1	.000
[river=Menanggul ]	0 <sup>a</sup>	.	.	.	.	.	.
flowercombine (Scale)	-.172	.0673	-.304	-.040	6.514	1	.011

Dependent Variable: omg

Model: (Intercept), season, river, flowercombine, offset = lnrl

a. Set to zero because this parameter is redundant.

b. Computed based on the deviance.

Table 4 Poisson Regression Model full starting model is the same as for OMG, here is the final model for AMG surveyed.

Model Information

Dependent Variable	amg
Probability Distribution	Poisson
Link Function	Log
Offset Variable	lnrl

Case Processing Summary

	N	Percent
Included	59	71.1%
Excluded	24	28.9%
Total	83	100.0%

Categorical Variable Information

			N	Percent
Factor	season	flooding	19	32.2%
		normal	40	67.8%
		Total	59	100.0%
river		Menanggul	22	37.3%
		Sg. Resang	19	32.2%
		Tenagang Besar	18	30.5%



	Total	59	100.0%
Censcode	Morning	25	42.4%
	Night	34	57.6%
	Total	59	100.0%

Continuous Variable Information

		N	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable	amg	59	0	2	.80	.783
Covariate	Boatnumb	59	.00	13.00	2.1186	2.69152
	Indinboat	59	.00	91.00	11.0339	19.29531
	meanml	59	60.61	94.02	81.9685	8.46371
	meanyl	59	3.94	31.94	14.7021	7.94917
	means	59	.00	2.02	.1170	.36739
	flowercombine	59	.00	6.56	1.8480	1.93052
	fruitcombine	59	.13	3.86	1.3487	.99860
Offset	lnrl	59	5.99	8.55	7.8091	.75952

Goodness of Fit<sup>d</sup>

	Value	df	Value/df
Deviance	29.208	54	.541
Scaled Deviance	54.000	54	
Pearson Chi-Square	29.158	54	.540
Scaled Pearson Chi-Square	53.907	54	
Log Likelihood <sup>a,b</sup>	-52.593		
Adjusted Log Likelihood <sup>c</sup>	-97.233		
Akaike's Information Criterion (AIC)	115.187		
Finite Sample Corrected AIC (AICC)	116.319		
Bayesian Information Criterion (BIC)	125.574		
Consistent AIC (CAIC)	130.574		

Dependent Variable: amg

Model: (Intercept), river, meanml, meanyl, offset = lnrl

- The full log likelihood function is displayed and used in computing information criteria.
- The log likelihood is based on a scale parameter fixed at 1.
- The adjusted log likelihood is based on an estimated scale parameter and is used in the model fitting omnibus test.
- Information criteria are in small-is-better form.

Omnibus Test<sup>a</sup>

Likelihood Ratio Chi-Square	df	Sig.
21.931	4	.000

Dependent Variable: amg

Model: (Intercept), river, meanml, meanyl, offset = lnrl

- Compares the fitted model against the intercept-only model.

Tests of Model Effects

Source	Type III		
	Wald Chi-Square	df	Sig.
(Intercept)	.598	1	.439
river	17.446	2	.000
meanml	5.163	1	.023
meanyl	5.688	1	.017

Dependent Variable: amg

Model: (Intercept), river, meanml, meanyl, offset = lnrl

#### Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
			(Intercept)	5.128	5.6117	-5.871	16.127
[river=Menanggul ]	-.698	.2258	-1.141	-.256	9.563	1	.002
[river=Sg. Resang ]	-1.958	.6880	-3.306	-.609	8.096	1	.004
[river=Tenagang Besar]	0 <sup>a</sup>	.	.	.	.	.	.
meanml	-.131	.0578	-.245	-.018	5.163	1	.023
meanyl	-.139	.0582	-.253	-.025	5.688	1	.017
(Scale)	.541 <sup>b</sup>						

Dependent Variable: amg

Model: (Intercept), river, meanml, meanyl, offset = lnrl

a. Set to zero because this parameter is redundant.

b. Computed based on the deviance.

Table 5 Poisson Regression Model full starting model is the same as for OMG, here is the final model for total group number surveyed.

#### Model Information

Dependent Variable	totalgroup
Probability Distribution	Poisson
Link Function	Log
Offset Variable	lnrl

#### Case Processing Summary

	N	Percent
Included	59	71.1%
Excluded	24	28.9%
Total	83	100.0%

#### Categorical Variable Information

			N	Percent
Factor	season	normal	40	67.8%
		flooding	19	32.2%
		Total	59	100.0%
river	Tenagang Besar	18	30.5%	

	Sg. Resang	19	32.2%
	Menanggul	22	37.3%
	Total	59	100.0%
Censcode	Night	34	57.6%
	Morning	25	42.4%
	Total	59	100.0%

#### Continuous Variable Information

		N	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable	totalgroup	59	0	10	3.73	2.552
Covariate	Boatnumb	59	.00	13.00	2.1186	2.69152
	Indinboat	59	.00	91.00	11.0339	19.29531
	meanml	59	60.61	94.02	81.9685	8.46371
	meanyl	59	3.94	31.94	14.7021	7.94917
	means	59	.00	2.02	.1170	.36739
	flowercombine	59	.00	6.56	1.8480	1.93052
	fruitcombine	59	.13	3.86	1.3487	.99860
Offset	lnrl	59	5.99	8.55	7.8091	.75952

#### Goodness of Fit<sup>d</sup>

	Value	df	Value/df
Deviance	48.761	54	.903
Scaled Deviance	54.000	54	
Pearson Chi-Square	42.478	54	.787
Scaled Pearson Chi-Square	47.041	54	
Log Likelihood <sup>a,b</sup>	-109.201		
Adjusted Log Likelihood <sup>c</sup>	-120.933		
Akaike's Information Criterion (AIC)	228.402		
Finite Sample Corrected AIC (AICC)	229.534		
Bayesian Information Criterion (BIC)	238.789		
Consistent AIC (CAIC)	243.789		

Dependent Variable: totalgroup

Model: (Intercept), season, river, flowercombine, offset = lnrl

- The full log likelihood function is displayed and used in computing information criteria.
- The log likelihood is based on a scale parameter fixed at 1.
- The adjusted log likelihood is based on an estimated scale parameter and is used in the model fitting omnibus test.
- Information criteria are in small-is-better form.

#### Omnibus Test<sup>a</sup>

Likelihood Ratio Chi-Square	df	Sig.
28.198	4	.000

Dependent Variable: totalgroup

Model: (Intercept), season, river, flowercombine, offset = lnrl

- Compares the fitted model against the intercept-only model.

#### Tests of Model Effects

Source	Type III		
	Wald Chi-Square	df	Sig.
(Intercept)	3143.749	1	.000
season	14.733	1	.000
river	11.786	2	.003
flowercombine	5.060	1	.024

Dependent Variable: totalgroup

Model: (Intercept), season, river, flowercombine, offset = lnrl

#### Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	-7.157	.1681	-7.486	-6.827	1811.830	1	.000
[season=normal ]	.617	.1608	.302	.932	14.733	1	.000
[season=flooding]	0 <sup>a</sup>	.	.	.	.	.	.
[river=Tenagang Besar]	.181	.1433	-.100	.462	1.599	1	.206
[river=Sg. Resang ]	.689	.2012	.295	1.083	11.723	1	.001
[river=Menanggul ]	0 <sup>a</sup>	.	.	.	.	.	.
flowercombine	-.110	.0490	-.206	-.014	5.060	1	.024
(Scale)	.903 <sup>b</sup>						

Dependent Variable: totalgroup

Model: (Intercept), season, river, flowercombine, offset = lnrl

a. Set to zero because this parameter is redundant.

b. Computed based on the deviance.

Table 6 Poisson Regression Model full starting model is the same as for OMG, here is the final model for total individual proboscis monkeys seen.

#### Model Information

Dependent Variable	totalind
Probability Distribution	Poisson
Link Function	Log
Offset Variable	lnrl

#### Case Processing Summary

	N	Percent
Included	59	71.1%
Excluded	24	28.9%
Total	83	100.0%

#### Categorical Variable Information

			N	Percent
Factor	season	flooding	19	32.2%
		normal	40	67.8%
		Total	59	100.0%
river	Menanggul	22	37.3%	

	Sg. Resang	19	32.2%
	Tenagang Besar	18	30.5%
	Total	59	100.0%
Censcode	Morning	25	42.4%
	Night	34	57.6%
	Total	59	100.0%

#### Continuous Variable Information

		N	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable	totalind	59	0	108	43.59	29.868
Covariate	Boatnumb	59	.00	13.00	2.1186	2.69152
	Indinboat	59	.00	91.00	11.0339	19.29531
	meanml	59	60.61	94.02	81.9685	8.46371
	meanyl	59	3.94	31.94	14.7021	7.94917
	means	59	.00	2.02	.1170	.36739
	flowercombine	59	.00	6.56	1.8480	1.93052
	fruitcombine	59	.13	3.86	1.3487	.99860
Offset	lnrl	59	5.99	8.55	7.8091	.75952

#### Goodness of Fit<sup>d</sup>

	Value	df	Value/df
Deviance	605.557	52	11.645
Scaled Deviance	52.000	52	
Pearson Chi-Square	533.034	52	10.251
Scaled Pearson Chi-Square	45.772	52	
Log Likelihood <sup>a,b</sup>	-452.215		
Adjusted Log Likelihood <sup>c</sup>	-38.832		
Akaike's Information Criterion (AIC)	918.430		
Finite Sample Corrected AIC (AICC)	920.626		
Bayesian Information Criterion (BIC)	932.972		
Consistent AIC (CAIC)	939.972		

Dependent Variable: totalind

Model: (Intercept), season, river, Censcode, Boatnumb, flowercombine, offset = lnrl

a. The full log likelihood function is displayed and used in computing information criteria.

b. The log likelihood is based on a scale parameter fixed at 1.

c. The adjusted log likelihood is based on an estimated scale parameter and is used in the model fitting omnibus test.

d. Information criteria are in small-is-better form.

#### Omnibus Test<sup>a</sup>

Likelihood Ratio Chi-Square	df	Sig.
40.266	6	.000

Dependent Variable: totalind

Model: (Intercept), season, river, Censcode, Boatnumb, flowercombine, offset = lnrl

a. Compares the fitted model against the intercept-only model.

Tests of Model Effects

Source	Type III		
	Wald Chi-Square	df	Sig.
(Intercept)	929.092	1	.000
season	13.054	1	.000
river	6.905	2	.032
Censcode	4.285	1	.038
Boatnumb	5.274	1	.022
flowercombine	7.722	1	.005

Dependent Variable: totalind

Model: (Intercept), season, river, Censcode, Boatnumb, flowercombine, offset = lnrl

Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	-3.557	.1655	-3.881	-3.232	461.786	1	.000
[season=flooding]	-.608	.1684	-.938	-.278	13.054	1	.000
[season=normal ]	0 <sup>a</sup>	.	.	.	.	.	.
[river=Menanggul ]	-.084	.1714	-.419	.252	.237	1	.626
[river=Sg. Resang ]	.501	.2153	.079	.923	5.416	1	.020
[river=Tenagang Besar]	0 <sup>a</sup>	.	.	.	.	.	.
[Censcode=Morning]	-.360	.1738	-.700	-.019	4.285	1	.038
[Censcode=Night ]	0 <sup>a</sup>	.	.	.	.	.	.
Boatnumb	-.080	.0348	-.148	-.012	5.274	1	.022
flowercombine	-.148	.0532	-.252	-.044	7.722	1	.005
(Scale)	11.645 <sup>b</sup>						

Dependent Variable: totalind

Model: (Intercept), season, river, Censcode, Boatnumb, flowercombine, offset = lnrl

a. Set to zero because this parameter is redundant.

b. Computed based on the deviance.

## Menanggul Census

Table 7 Group Counts from Census on the Menanggul

Date	Census	OMG	AMG	NBG	?	Total Group	Number Individual	Estimate	
06 2003	NC	6	0	0	0	2	8	84	0
06 2003	MC	4	1	0	0	0	5	45	1
07 2003	NC	5	0	0	0	3	8	79	3
07 2003	MC	8	0	0	0	3	11	87	6
08 2003	NC	5	1	0	0	1	7	99	7
08 2003	MC	4	1	0	0	0	5	68	10
09 2003	NC	7	1	0	0	0	8	70	8
09 2003	MC	7	1	0	0	0	8	92	1
10 2003	NC	3	1	0	0	0	4	64	8
10 2003	MC	4	1	0	0	0	5	76	5
11 2003	NC	2	0	0	0	3	5	45	7
11 2003	MC	3	1	0	0	0	4	58	11
12 2003	NC	0	0	0	0	2	2	14	1
12 2003	MC	1	0	0	0	0	1	14	14
1 2004	NC	1	2	0	0	2	5	67	8
1 2004	MC	7	0	0	0	1	8	79	5
2 2004	NC	3	0	0	0	0	3	29	14
2 2004	MC	3	0	0	0	1	4	39	8
3 2004	NC	4	1	0	0	0	5	49	5
3 2004	MC	3	1	0	0	0	4	40	2
4 2004	NC	4	1	0	0	0	5	54	2
4 2004	MC	3	1	0	0	0	4	30	4
5 2004	NC	6	2	0	0	0	8	108	0
5 2004	MC	8	0	0	0	2	10	79	5
6 2004	NC	2	0	0	0	0	2	26	0
6 2004	MC	4	2	0	0	0	6	71	7
7 2004	NC	7	2	0	0	1	10	97	5
7 2004	MC	4	1	0	0	2	7	65	10
Total		118	21	0	0	23	162	1728	

Table 8 Density of individuals and groups during census on the Menanggul

DATE	CENSUS	individuals	km	indiv/km	Est.inv/km	group	group/km
06 2003	NC	84	4150	20.24096	20.24096	8	1.927711
06 2003	MC	45	3275	13.74046	14.0458	5	1.526718
07 2003	NC	79	5000	15.8	16.4	8	1.6
07 2003	MC	87	5000	17.4	18.6	11	2.2
08 2003	NC	99	3325	29.77444	31.8797	7	2.105263
08 2003	MC	68	4875	13.94872	16	5	1.025641
09 2003	NC	70	5000	14	15.6	8	1.6
09 2003	MC	92	4875	18.87179	19.07692	8	1.641026
10 2003	NC	64	4875	13.12821	14.76923	4	0.820513
10 2003	MC	76	4875	15.58974	16.61538	5	1.025641
11 2003	NC	45	5000	9	10.4	5	1
11 2003	MC	58	5000	11.6	13.8	4	0.8
12 2003	NC	14	5000	2.8	3	2	0.4
12 2003	MC	14	5000	2.8	5.6	1	0.2
1 2004	NC	67	5000	13.4	15	5	1
1 2004	MC	46	5000	9.2	10.2	4	0.8
2 2004	NC	29	5000	5.8	8.6	3	0.6
2 2004	MC	39	5000	7.8	9.4	4	0.8
3 2004	NC	49	5000	9.8	10.8	5	1
3 2004	MC	40	5150	7.76699	8.15534	4	0.776699
4 2004	NC	54	4350	12.41379	12.87356	5	1.149425
4 2004	MC	30	4000	7.5	8.5	4	1
5 2004	NC	108	5000	21.6	21.6	8	1.6
5 2004	MC	79	5000	15.8	16.8	8	1.6
6 2004	NC	26	5150	5.048544	5.048544	2	0.38835
6 2004	MC	71	5150	13.78641	15.14563	6	1.165049
7 2004	NC	97	5000	19.4	20.4	10	2
7 2004	MC	65	5000	13	15	7	1.4



Table 9 Menanggul counts of group make up for 4 censuses

date	group type	AM	AF	SAM	SAF	SA?	J	I	?	Total
5	Omg 1	1	3	0	0	3	1	1	2	11
5	Omg 2	1	2	0	0	4	1	2	2	12
5	Nbg 3	2	1	0	0	17	0	0	0	20
5	Amg 4	3	0	0	0	3	0	0	0	6
5	? 5	1	0	0	0	5	2	0	0	8
5	Omg 6	1	10	0	0	2	7	4	0	24
5	? 7	1	0	3	0	3	1	1	0	9
5	Omg 8	1	7	0	0	5	2	3	0	18
8	Omg 1	1	5	0	0	5	3	3	0	17
8	Omg 2	1	2	0	0	5	1	2	0	11
8	Nbg 3	2	1	2	1	9	4	0	0	19
8	Omg 4	1	8	0	0	4	3	4	0	20
8	Omg 5	1	3	0	0	5	1	1	0	11
8	? 6	1	0	0	0	0	0	0	0	1
8	? 7	1	6	2	0	5	4	2	0	20
704	Omg 1	1	4	0	0	2	0	4	0	11
704	Omg 2	1	6	0	0	3	4	1	0	15
704	Amg 3	2	0	0	0	7	0	0	0	9
704	Omg 4	1	3	0	0	2	2	2	0	10
704	Omg 5	1	2	0	0	3	1	1	0	8
704	Omg 6	1	2	0	0	1	2	3	0	9
704	? 7	1	0	0	0	1	0	0	0	2
704	Omg 8	1	5	0	0	0	4	3	0	13
704	Amg 9	3	0	0	0	8	2	0	0	13
704	? 10	0	0	0	0	4	2	1	0	7
703	Omg 1	1	4	0	0	1	4	1	0	11
703	? 2	1	3	1	0	4	3	0	0	12
703	Amg 3	0	1	0	0	1	1	0	0	3
703	Nbg 4	1	1	0	1	2	2	0	0	7
703	? 5	0	0	1	0	0	1	0	0	2
703	Amg 6	1	0	1	0	2	0	0	0	4
703	Amg 7	1	0	5	3	1	2	0	0	12
703	Omg 8	0	1	0	0	1	0	1	0	3
703	Omg 9	1	4	1	3	1	3	1	0	14
703	Nbg 10	1	1	1	1	2	3	0	0	9
703	Omg 11	1	1	0	0	3	3	1	0	9

Table 10 Count of make up by age sex group on the river for each census

Menanggul months		Age Sex Group								
		Adult male	Adult Female	Subadult male	Subadult female	Subadult unknown	Juvenile	Infant	Unknown	Total
		count								
June 2003	Morning	0	0	0	0	0	0	0	0	0
	Night	8	10	10	11	3	16	7	0	65
July 2003	Morning	15	9	7	9	11	20	3	0	74
	Night	0	0	0	0	0	0	0	0	0
August 2003	Morning	5	11	2	1	9	15	6	3	52
	Night	3	1	2	1	10	4	0	0	21
September 2003	Morning	7	22	5	4	21	15	12	0	86
	Night	8	13	4	3	15	16	8	0	67
October 2003	Morning	4	18	1	1	18	9	11	0	62
	Night	3	8	1	7	6	5	5	0	35
November 2003	Morning	2	10	3	0	10	2	8	2	37
	Night	10	2	10	0	12	7	2	1	44
December 2003	Morning	1	1	0	0	7	1	3	1	14
	Night	1	4	0	0	2	5	1	1	14
January 2004	Morning	3	4	0	1	11	5	3	16	43
	Night	5	6	0	0	27	2	6	0	46
February 2004	Morning	3	7	0	0	22	1	6	0	39
	Night	2	8	0	0	9	3	6	0	28
March 2004	Morning	6	5	2	1	15	4	3	4	40
	Night	2	5	1	0	0	4	2	5	19
April 2004	Morning	2	4	0	0	5	3	2	0	16
	Night	5	13	8	1	8	16	3	0	54
May 2004	Morning	7	21	0	3	30	9	12	2	84
	Night	6	22	3	0	22	14	11	4	82
June 2004	Morning	4	10	0	1	14	6	6	0	41
	Night	3	11	0	0	10	5	8	1	38
July 2004	Morning	6	14	0	0	24	6	7	2	59
	Night	10	34	2	0	30	25	22	0	123
Total	Morning	65	136	20	21	197	96	82	30	647
	Night	66	137	41	23	154	122	81	12	636

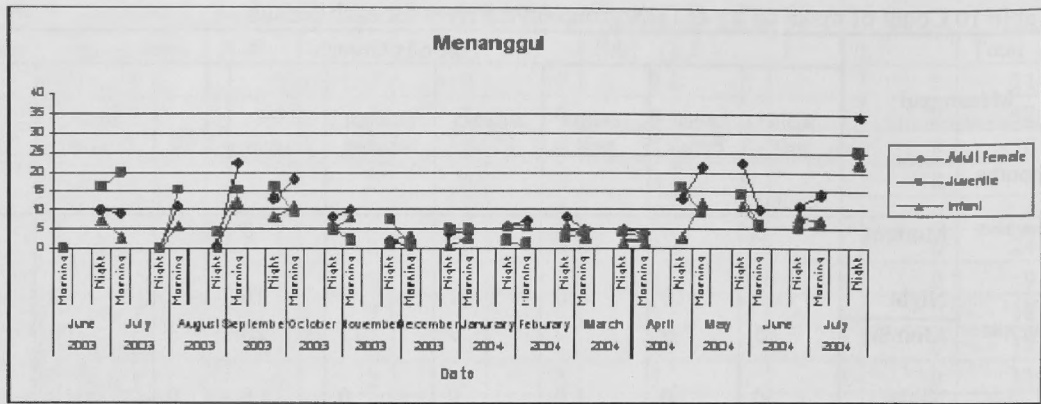


Figure 1 Numbers of females, juveniles and infants on Sukau over study from census

Table 11 Night census July 2004 Menanggul river distance measured in Google maps. Distance between groups in KM group 1 by mouth moving up river. Cross reference with map image of this census.

OMG	1	4.51	4.47	4.43	4.37	3.51	3.45	3.37	1.74	XX
AMG	2	2.76	2.72	2.68	2.6	1.76	1.7	1.63	XX	
OMG	3	1.12	1.08	1.04	.98	.13	.07	XX		
2 indiv	4	1.03	1.00	.95	.89	.06	XX			
2 OMG	5	1.00	.96	.91	.83	XX				
OMG	6	.16	.11	.06	XX					
AMG	7	.09	.04	XX						
OMG	8	.03	XX							
OMG	9	XX								
	group	9	8	7	6	5	4	3	2	1

Table 12 Night census June 2004 Menanggul river distance measured in Google maps. Distance between groups is measured in KM. Group 1 by mouth moving up river. This is the census when the river showed a high boat load of 13. Cross reference with map image of this census.

OMG	1	4.88	4.76	4.56	.09	XX
OMG	2	4.79	4.66	4.46	XX	
AMG	3	.31	.21	XX		
OMG	4	.10	XX			
OMG	5	XX				
	5	4	3	2	1	

# Sukau Census

Table 13 Group Counts from Census on the Sukau

Date	Census	OMG	AMG	NBG	?	Total Group	Number Individual	Estimate
06 2003	NC	3	0	0	1	4	54	0
06 2003	MC	4	1	0	1	6	39	5
07 2003	NC	1	0	0	0	1	17	0
07 2003	MC	1	0	0	0	1	15	0
08 2003	NC	2	0	0	0	2	28	2
08 2003	MC	Not	possible	Census				
09 2003	NC	0	2	0	1	3	14	1
09 2003	MC	0	1	0	2	3	11	0
10 2003	NC	0	0	0	0	0	0	0
10 2003	MC	0	0	0	0	0	0	0
11 2003	NC	0	0	0	0	0	0	0
11 2003	MC	0	0	0	0	0	0	0
12 2003	NC	0	1	0	2	3	21	1
12 2003	MC	1	0	0	1	2	16	2
01 2004	NC	1	2	0	0	3	19	9
01 2004	MC	0	0	0	2	2	19	7
02 2004	NC	0	0	0	0	0	0	0
02 2004	MC	0	0	0	0	0	0	0
03 2004	NC	0	0	0	0	0	0	0
03 2004	MC	0	0	0	0	0	0	0
04 2004	NC	2	1	0	1	4	42	0
04 2004	MC	Not	Possible	Census				
05 2004	NC	4	1	0	0	5	75	6
05 2004	MC	4	1	1	0	6	83	4
06 2004	NC	1	0	0	0	1	13	0
06 2004	MC	1	0	0	0	1	16	10
07 2004	NC	Not	Possible	census				
07 2004	MC	Not	Possible	Census				

Table 14 Density of individuals and groups during census on Sukau

Date	census	individual s	km	indiv/km	estimate/k m	group	group/km
06 2003	NC	54	1150	46.95652	46.95652	4	3.478261
06 2003	MC	39	1150	33.91304	38.26087	6	5.217391
07 2003	NC	17	1150	14.78261	14.78261	1	0.869565
07 2003	MC	15	1150	13.04348	13.04348	1	0.869565
08 2003	NC	28	1150	24.34783	26.08696	2	1.73913
08 2003	MC						
09 2003	NC	14	1150	12.17391	13.04348	3	2.608696
09 2003	MC	11	1150	9.565217	9.565217	3	2.608696
10 2003	NC	0	975	0	0	0	0
10 2003	MC	0	975	0	0	0	0
11 2003	NC	0	950	0	0	0	0
11 2003	MC	0	950	0	0	0	0
12 2003	NC	21	1150	18.26087	19.13043	3	2.608696
12 2003	MC	16	1150	13.91304	15.65217	2	1.73913
01 2004	NC	19	1150	16.52174	24.34783	3	2.608696
01 2004	MC	19	1150	16.52174	22.6087	2	1.73913
02 2004	NC	0	1150	0	0	0	0
02 2004	MC	0	1150	0	0	0	0
03 2004	NC	0	1000	0	0	0	0
03 2004	MC	0	1150	0	0	0	0
04 2004	NC	42	1150	36.52174	36.52174	4	3.478261
04 2004	MC						
05 2004	NC	75	1275	58.82353	63.52941	5	3.921569
05 2004	MC	83	730	113.6986	119.1781	6	8.219178
06 2004	NC	13	1075	12.09302	12.09302	1	0.930233
06 2004	MC	16	1150	13.91304	22.6087	1	0.869565
07 2004	NC						
07 2004	MC						

Table 15 Count of make up by age sex group on the Sukau for 4 censuses

date	group type	AM	AF	SAM	SAF	SA?	J	I	?	Total
504	Omg 1	1	5	0	0	6	2	2	0	16
504	Omg 2	1	5	0	0	6	2	3	0	17
504	Omg 3	1	10	0	0	2	3	4	0	20
504	Omg 4	1	4	0	0	2	1	3	0	11
504	Amg 5	2	0	1	0	8	0	0	0	11
404	Amg 1	0	0	4	0	3	0	0	0	7
404	Omg 2	1	2	4	1	8	1	1	1	19
404	Omg 3	1	2	1	0	5	2	1	1	13
404	Omg 4	1	3	0	0	3	2	1	0	10
504	Amg 1	2	0	0	0	7	0	0	1	10
504	? 2	1	0	1	2	4	0	0	0	8
504	Omg 3	1	7	0	0	4	2	5	0	19
504	Omg 4	1	4	0	0	6	2	2	0	15
504	Omg 5	2	7	0	3	7	1	5	3	28
603	? 1	1	3	2	0	1	1	1	0	9
603	? 2	1	1	1	0	0	0	1	0	4
603	? 3	1	0	0	0	0	1	0	7	9
603	? 4	1	5	2	1	1	4	1	0	15
603	Omg 5	1	3	0	0	5	5	3	0	17

Table 16 Sukau count of make up by age sex group on the river for each census

Sukau months		Age Sex Group								Total Count
		Adult male Count	Adult Female Count	Subadult male Count	Subadult female Count	Subadult unknown Count	Juvenile Count	Infant Count	Unknown Count	
June 2003	Morning	0	0	0	0	0	0	0	0	0
	Night	0	0	0	0	0	0	0	0	0
July 2003	Morning	2	5	1	0	7	7	0	0	22
	Night	2	7	0	4	1	10	5	0	29
August 2003	Morning	0	0	0	0	0	0	0	0	0
	Night	5	13	0	0	14	7	6	0	45
September 2003	Morning	0	0	0	0	0	0	0	0	0
	Night	0	0	0	0	0	0	0	0	0
October 2003	Morning	0	0	0	0	0	0	0	0	0
	Night	0	0	0	0	0	0	0	0	0
November 2003	Morning	0	0	0	0	0	0	0	0	0
	Night	0	0	0	0	0	0	0	0	0
December 2003	Morning	4	4	0	0	9	6	0	1	24
	Night	1	0	0	0	1	0	0	0	2
January 2004	Morning	2	0	0	0	12	3	0	0	17
	Night	1	4	0	0	5	4	7	0	21
February 2004	Morning	0	0	0	0	0	0	0	0	0
	Night	0	0	0	0	0	0	0	0	0
March 2004	Morning	0	0	0	0	0	0	0	0	0
	Night	0	0	0	0	0	0	0	0	0
April 2004	Morning	0	0	0	0	0	0	0	0	0
	Night	5	9	4	1	23	7	4	2	55
May 2004	Morning	6	23	1	5	34	5	15	5	94
	Night	6	29	1	0	20	10	15	0	81
June 2004	Morning	1	10	0	0	7	5	4	0	27
	Night	1	4	0	0	5	1	2	0	13
July 2004	Morning	0	0	0	0	0	0	0	0	0
	Night	0	0	0	0	0	0	0	0	0
Total	Morning	15	42	2	5	69	26	19	6	184
	Night	21	66	5	5	69	39	39	2	246

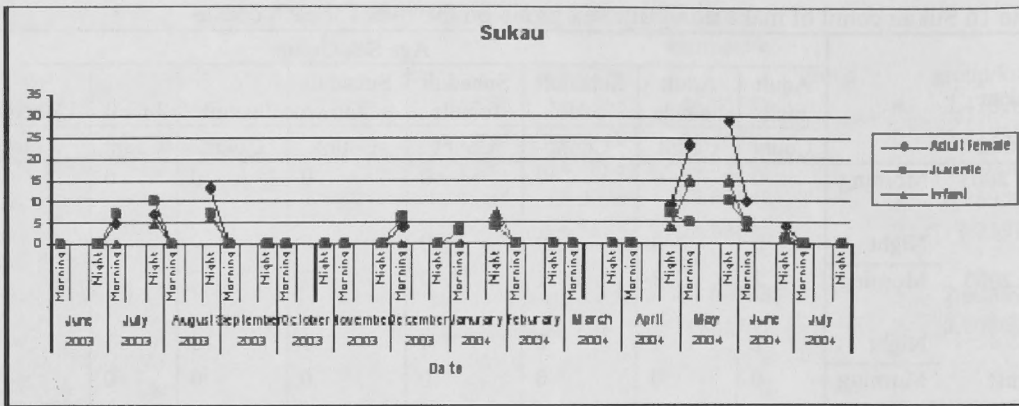


Figure 2 Numbers of females, juveniles and infants on Sukau over study from census

### Resang Census

Table 17 Group Counts from Census on the Resang

Date	Census	OMG	AMG	NBG	?	Total Group	Number Individual	Estimate	
06 2003	NC		3	0	0	1	3	33	2
06 2003	MC		2	0	0	0	2	15	2
07 2003	NC		2	0	0	0	2	1	8
07 2003	MC		1	0	0	2	3	15	7
08 2003	NC		1	0	0	0	1	16	3
08 2003	MC		0	0	0	2	2	17	0
09 2003	NC		1	0	0	1	2	23	2
09 2003	MC		3	0	0	2	5	43	3
10 2003	NC		2	1	0	0	3	56	6
10 2003	MC		1	0	0	1	1	12	9
11 2003	NC		3	0	0	0	3	46	2
11 2003	MC		2	0	0	0	2	12	5
12 2003	NC		2	0	0	0	2	49	2
12 2003	MC		0	0	0	2	2	19	11
01 2004	NC		1	0	0	0	1	15	0
01 2004	MC		3	0	0	0	3	37	8
02 2004	NC		0	0	0	0	0	0	0
02 2004	MC		1	0	0	0	1	17	3
03 2004	NC		1	0	0	0	1	18	3
03 2004	MC		2	0	0	0	2	24	6
04 2004	NC		1	0	0	1	2	12	7
04 2004	MC		1	0	0	0	1	14	5
05 2004	NC		0	0	0	0	0	0	0
05 2004	MC		1	1	0	0	2	18	5
06 2004	NC		0	0	0	0	0	0	0
06 2004	MC		1	0	0	0	1	8	2
07 2004	NC		0	0	0	1	1	1	3
07 2004	MC		3	0	0	0	3	34	9

Incomplete Census 7/04 NC/MC

Table 18 Density of individuals and groups during census on the Resang

Date	census	individual s	km	indiv/km	estimate/k m	group	group/km
06 2003	NC	33	900	36.66667	38.88889	3	3.333333
06 2003	MC	15	900	16.66667	18.88889	2	2.222222
07 2003	NC	1	900	1.111111	10	2	2.222222
07 2003	MC	15	900	16.66667	24.44444	3	3.333333
08 2003	NC	16	900	17.77778	21.11111	1	1.111111
08 2003	MC	17	900	18.88889	18.88889	2	2.222222
09 2003	NC	23	900	25.55556	27.77778	2	2.222222
09 2003	MC	43	900	47.77778	51.11111	5	5.555556
10 2003	NC	56	900	62.22222	68.88889	3	3.333333
10 2003	MC	12	900	13.33333	23.33333	1	1.111111
11 2003	NC	46	900	51.11111	53.33333	3	3.333333
11 2003	MC	12	900	13.33333	18.88889	2	2.222222
12 2003	NC	49	900	54.44444	56.66667	2	2.222222
12 2003	MC	19	900	21.11111	33.33333	2	2.222222
01 2004	NC	15	900	16.66667	16.66667	1	1.111111
01 2004	MC	37	900	41.11111	50	3	3.333333
02 2004	NC	0	900	0	0	0	0
02 2004	MC	17	900	18.88889	22.22222	1	1.111111
03 2004	NC	18	900	20	23.33333	1	1.111111
03 2004	MC	24	900	26.66667	33.33333	2	2.222222
04 2004	NC	12	900	13.33333	21.11111	2	2.222222
04 2004	MC	14	900	15.55556	21.11111	1	1.111111
05 2004	NC	0	900	0	0	0	0
05 2004	MC	18	900	20	25.55556	2	2.222222
06 2004	NC	0	900	0	0	0	0
06 2004	MC	8	900	8.88889	11.11111	1	1.111111
07 2004	NC	1	900	1.111111	4.444444	1	1.111111
07 2004	MC	34	400	85	107.5	3	7.5

Table 19 Resang river counts of group make up for 4 censuses

date	group type	AM	AF	SAM	SAF	SA?	J	I	?	Total
903	Omg 1	1	1	0	0	4	2	2	0	10
903	Omg 2	0	1	0	0	3	2	1	0	7
903	Omg 3	1	5	0	0	3	4	4	0	17
903	Omg 4	1	2	0	0	4	1	2	0	10
903	? 5	0	0	0	0	1	0	0	0	1
903	Omg 6	0	2	0	0	4	3	2	0	11
1003	Amg1	2	0	18	0	0	0	0	0	20
1003	Omg 2	1	2	0	0	5	5	2	0	15
1003	Omg 3	1	5	0	0	10	2	5	0	23
1103	Omg 1	1	3	1	0	6	0	2	0	13
1103	Omg 2	1	4	0	0	6	1	3	1	16
1103	? 3	2	4	3	0	5	2	1	0	17
1203	Omg 1	1	7	0	0	9	7	2	1	27
1203	Omg 2	1	4	0	0	10	2	4	1	22



Table 20 Count of make up by age sex group on the river for each census on the Resang

Resang	months	Age Sex Group								
		Adult male	Adult Female	Subadult male	Subadult female	Subadult unknown	Juvenile	Infant	Unknown	Total
		Count	Count	Count	Count	Count	Count	Count	Count	Count
June 2003	Morning	1	0	0	0	0	0	0	0	1
	Night	0	0	0	0	0	0	0	0	0
July 2003	Morning	2	4	0	0	2	4	2	0	14
	Night	0	0	0	0	0	0	0	0	0
August 2003	Morning	0	3	0	2	6	4	1	0	16
	Night	1	6	1	1	2	5	0	0	16
September 2003	Morning	3	10	0	0	15	10	9	1	48
	Night	2	7	1	3	7	7	7	1	35
October 2003	Morning	0	0	0	0	8	0	0	0	8
	Night	4	13	2	0	27	13	10	0	69
November 2003	Morning	3	5	0	0	9	1	1	4	23
	Night	5	16	4	3	21	4	9	1	63
December 2003	Morning	0	5	0	0	9	4	2	1	21
	Night	3	13	0	0	27	12	6	3	64
January 2004	Morning	3	6	0	2	23	11	4	0	49
	Night	0	3	0	1	2	6	1	1	14
February 2004	Morning	1	1	0	0	12	2	1	0	17
	Night	0	0	0	0	0	0	0	0	0
March 2004	Morning	2	4	1	0	9	5	2	1	24
	Night	2	6	0	0	12	8	1	1	30
April 2004	Morning	1	4	0	0	6	1	2	0	14
	Night	2	4	0	0	6	1	0	0	13
May 2004	Morning	2	0	2	4	9	1	0	0	18
	Night	0	0	0	0	0	0	0	0	0
June 2004	Morning	5	11	0	0	22	2	5	6	51
	Night	0	0	0	0	0	0	0	0	0
July 2004	Morning	0	0	0	0	0	0	0	0	0
	Night	0	1	0	0	0	0	0	0	1
Total	Morning	23	53	3	8	130	45	29	13	304
	Night	19	69	8	8	104	56	34	7	305

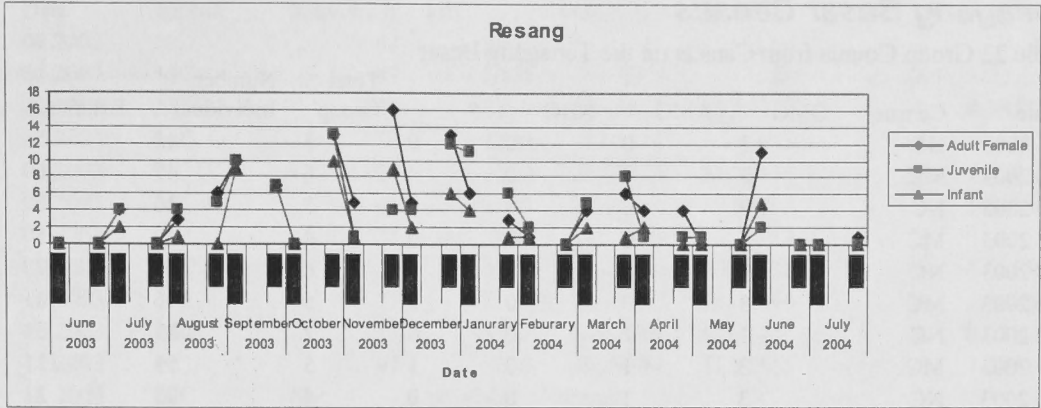


Figure 3 Numbers of females, juveniles and infants on Resang over study from census

Table 21 Night census July 2004 Resang river distance measured in Google maps. Distance between groups in KM group 1 by mouth moving up river. Cross reference with map image

OMG	1	.20	.04	XX
OMG	2	.16	XX	
OMG	3	XX		
	3	2	1	

Night Census June 2004 Resang river only one group present so no measurements possible. Two boats were present.

## Tenagang Besar Census

Table 22 Group Counts from Census on the Tenagang Besar

Date	Census	OMG	AMG	NBG	?	Total Group	Number Individual	Estimate
06 2003	NC	3	0	0	0	3	42	5
06 2003	MC	2	0	0	4	6	47	5
07 2003	NC	3	0	0	0	3	36	6
07 2003	MC	4	0	0	0	4	39	5
08 2003	NC	4	2	0	0	6	78	7
08 2003	MC	3	0	0	2	5	46	14
09 2003	NC	1	1	0	0	2	33	5
09 2003	MC	3	1	0	1	5	55	11
10 2003	NC	3	1	0	0	4	75	2
10 2003	MC	1	0	0	1	2	19	0
11 2003	NC	4	1	0	1	6	97	7
11 2003	MC	Not	Possible	census				
12 2003	NC	1	2	0	0	3	29	4
12 2003	MC	2	2	0	0	4	33	23
01 2004	NC	3	1	0	2	6	92	22
01 2004	MC	0	0	0	1	1	11	0
02 2004	NC	0	0	0	0	0	0	0
02 2004	MC	1	1	0	0	2	32	12
03 2004	NC	0	1	0	0	1	14	0
03 2004	MC	0	2	0	0	2	21	4
04 2004	NC	2	2	0	0	4	52	4
04 2004	MC	4	1	0	0	5	65	11
05 2004	NC	2	1	0	0	3	28	5
05 2004	MC	2	2	0	1	5	46	0
06 2004	NC	5	2	0	1	8	83	0
06 2004	MC	4	2	0	0	6	76	2
07 2004	NC	6	2	0	0	8	90	14
07 2004	MC	4	1	0	1	6	70	5

Table 23 Density of individuals and groups during census on the Tenagang Besar

Date	census	individuals	km	indiv/km	estim/km	group	group/km
06 2003	NC	42	2000	21	23.5	3	1.5
06 2003	MC	47	2000	23.5	26	6	3
07 2003	NC	36	3150	11.42857	13.33333	3	0.952381
07 2003	MC	39	3200	12.1875	13.75	4	1.25
08 2003	NC	78	3300	23.63636	25.75758	6	1.818182
08 2003	MC	46	3150	14.60317	19.04762	5	1.587302
09 2003	NC	33	2000	16.5	19	2	1
09 2003	MC	55	3150	17.46032	20.95238	5	1.587302
10 2003	NC	75	3150	23.80952	24.44444	4	1.269841
10 2003	MC	19	3150	6.031746	6.031746	2	0.634921
11 2003	NC	97	3300	29.39394	31.51515	6	1.818182
11 2003	MC	Not	possible	census			
12 2003	NC	29	3450	8.405797	9.565217	3	0.869565
12 2003	MC	33	3450	9.565217	16.23188	4	1.15942
01 2004	NC	53	3450	15.36232	20.86957	3	.869565
01 2004	MC	11	3450	3.188406	3.188406	1	0.289855
02 2004	NC	0	3450	0	0	0	0
02 2004	MC	32	3450	9.275362	12.75362	2	0.57971
03 2004	NC	14	3450	4.057971	4.057971	1	0.289855
03 2004	MC	21	3450	6.086957	7.246377	2	0.57971
04 2004	NC	52	3450	15.07246	16.23188	4	1.15942
04 2004	MC	65	3450	18.84058	22.02899	5	1.449275
05 2004	NC	28	3400	8.235294	9.705882	3	0.882353
05 2004	MC	46	3400	13.52941	13.52941	5	1.470588
06 2004	NC	83	3450	24.05797	24.05797	8	2.318841
06 2004	MC	76	3450	22.02899	22.6087	6	1.73913
07 2004	NC	90	3500	25.71429	29.71429	8	2.285714
07 2004	MC	70	3500	20	21.42857	6	1.714286

Table 24 Count of make up by age sex group on the Tenangang Besar for 4 censuses

date	group type	AM	AF	SAM	SAF	SA?	J	I	?	Total
1103	Amg 1	1	0	1	1	7	2	0	2	14
1103	Omg 2	0	1	0	0	2	0	1	0	4
1103	Omg 3	1	4	0	0	4	2	4	0	15
1103	Amg 4	3	0	9	0	2	2	0	0	16
1103	Omg 5	1	3	0	0	4	1	3	0	12
1103	Omg 6	1	6	0	4	0	1	6	0	18
1103	Omg 7	1	4	0	0	4	1	3	4	17
803	Omg 1	1	2	0	1	2	2	1	0	9
803	Omg 2	1	4	0	0	6	5	1	0	17
803	Amg 3	0	0	1	0	4	1	0	0	6
803	Amg 4	2	1	4	0	6	1	0	0	14
803	Omg 5	1	6	0	0	0	2	4	0	13
803	? 6	1	3	4	1	2	4	3	0	18
704	Omg 1	1	3	0	2	4	4	0	2	16
704	Omg 2	1	5	1	0	2	3	2	0	14
704	Omg 3	1	2	0	0	4	1	1	0	9
704	Amg 4	2	0	2	0	4	0	0	0	8
704	Amg 5	3	0	3	0	5	1	0	0	12
704	Omg 6	1	3	0	0	4	2	2	0	12
704	Omg 7	1	2	0	1	5	0	3	0	12
704	Omg 8	1	1	0	0	2	1	2	0	7
604	Amg 1	3	0	3	0	5	2	0	0	13
604	Omg 2	1	4	0	0	3	6	2	0	16
604	Omg 3	1	5	0	0	3	3	0	0	12
604	Omg 4	1	5	0	0	8	3	3	1	21
604	Amg 5	4	0	1	0	6	0	0	0	11
604	Omg 6	1	0	0	0	4	1	1	0	7
604	? 7	1	0	0	0	4	0	0	0	5

Table 25 Count of make up by age sex group on the river for each census on Tenagang Besar

Tenagang Besar months		Age Sex Group								Total
		Adult male	Adult Female	Subadult male	Subadult female	Subadult unknown	Juvenile	Infant	Unknown	
		Count	Count	Count	Count	Count	Count	Count	Count	Count
June 2003	Morning	0	0	0	0	0	0	0	0	0
	Night	3	9	5	1	1	10	7	0	36
July 2003	Morning	4	5	1	5	6	12	1	3	37
	Night	4	1	7	9	3	6	4	0	34
August 2003	Morning	5	9	2	1	14	12	2	0	45
	Night	4	15	4	2	10	12	9	0	56
September 2003	Morning	2	5	1	0	23	3	5	2	41
	Night	5	10	0	1	22	6	9	1	54
October 2003	Morning	3	5	0	0	8	1	1	1	19
	Night	4	22	12	5	23	10	15	0	91
November 2003	Morning	0	0	0	0	0	0	0	0	0
	Night	6	18	1	7	21	7	17	7	84
December 2003	Morning	1	0	0	0	3	0	0	0	4
	Night	0	0	0	0	0	0	0	0	0
January 2004	Morning	3	12	0	0	43	7	11	1	77
	Night	3	18	1	6	24	10	11	0	73
February 2004	Morning	1	1	0	0	11	1	1	0	15
	Night	0	0	0	0	0	0	0	0	0
March 2004	Morning	3	0	0	0	5	0	0	0	8
	Night	0	0	0	0	0	0	0	0	0
April 2004	Morning	3	8	0	0	13	5	4	1	34
	Night	4	6	2	4	17	6	5	0	44
May 2004	Morning	2	6	0	0	11	3	2	0	24
	Night	4	2	5	0	8	0	0	0	19
June 2004	Morning	5	9	0	1	22	10	8	1	56
	Night	14	35	1	3	56	29	18	3	159
July 2004	Morning	4	13	0	0	25	10	5	1	58
	Night	0	0	0	0	0	0	0	0	0
Total	Morning	36	73	4	7	184	64	40	10	418
	Night	51	136	38	38	185	96	95	11	650

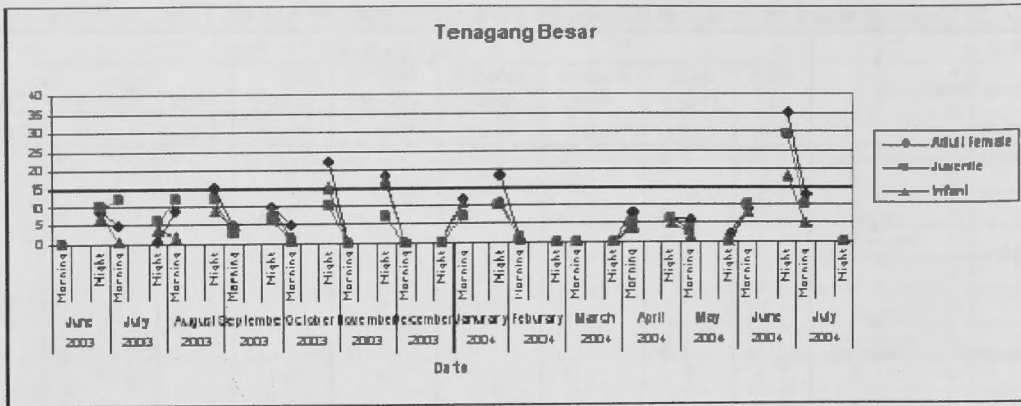


Figure 4 Numbers of females, juveniles and infants on Tenagang Besar over study from census.

Table 26 Night census July 2004 Tenagang Besar river distance measured in Google maps. Distance between groups in KM group 1 by mouth moving up river. Cross reference with map image

OMG 1	1	3.57	3.47	3.39	3.05	3.01	.54	.33	XX
OMG 2	2	3.21	3.11	3.04	2.68	2.66	.21	XX	
OMG 3	3	3.00	2.91	2.82	2.48	2.45	XX		
OMG 4	4	.56	.45	.38	.03	XX			
AMG 5	5	.52	.43	.35	XX				
AMG 6	6	.18	.08	XX					
OMG 7	7	.10	XX						
OMG 8	8	XX							
		8	7	6	5	4	3	2	1

Table 27 Night census June 2004 Tenagang Besar river distance measured in Google maps.

Distance between groups in KM. Group 1 by mouth moving up river. This is the census when the river showed a high boat load of 3. Cross reference with map image.

OMG 1	1	4.18	3.11	2.63	2.02	1.27	.56	.12	XX
OMG 2	2	4.18	3.11	2.63	2.02	1.27	.56	XX	
AMG 3	3	3.57	2.50	2.01	1.41	.63	XX		
OMG 4	4	2.84	1.77	1.27	.68	XX			
Lone	5	2.16	1.08	.60	XX				
OMG 6	6	1.56	.48	XX					
OMG 7	7	1.07	XX						
AMG 8	8	XX							
		8	7	6	5	4	3	2	1

Table 28 Night census July 2004 Kinabatangan river by Tenagang Besar toward Bilit distance measured in Google maps. Distance between groups in KM group 1 by mouth moving up river. Cross reference with map image. BOTTOM half is measured as the crow flies not along curvature of river

OMG 1	1	3.82	3.69	.34	XX
OMG 2	2	3.43	3.30	XX	.30
OMG 3	3	.15	XX	1.97	2.21
OMG 4	4	XX	.17	2.12	2.37
		4	3	2	1

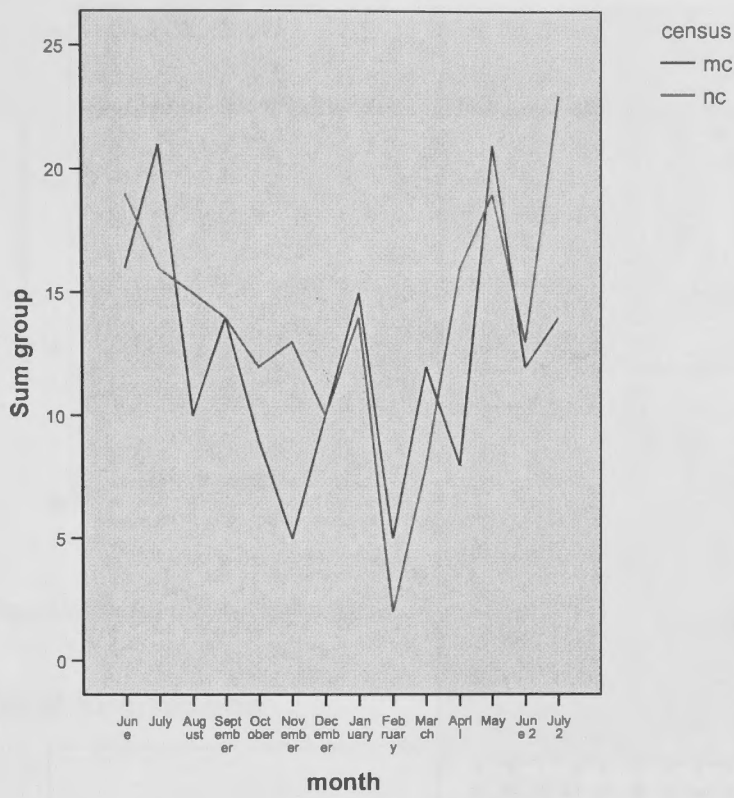


Figure 5 Summary of all group types on all census on all rivers by morning and night census.

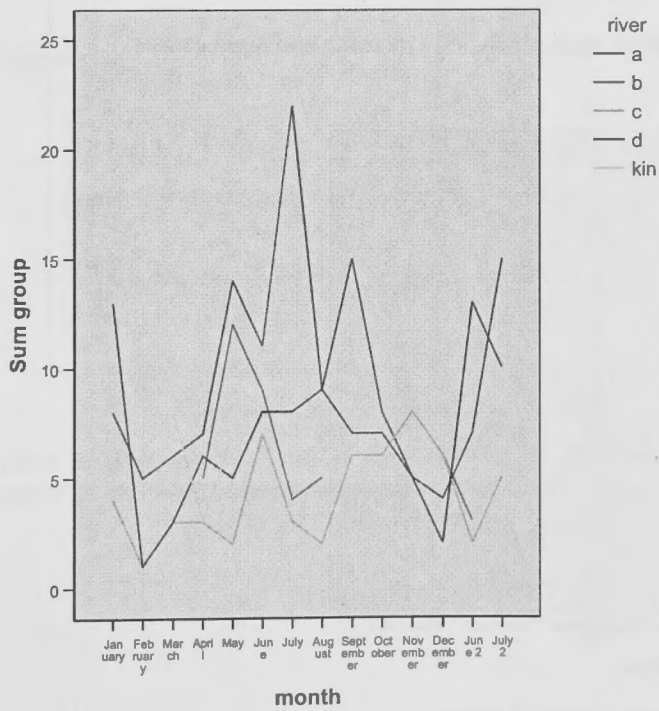


Figure 6 Summary of number of groups seen by river for each census



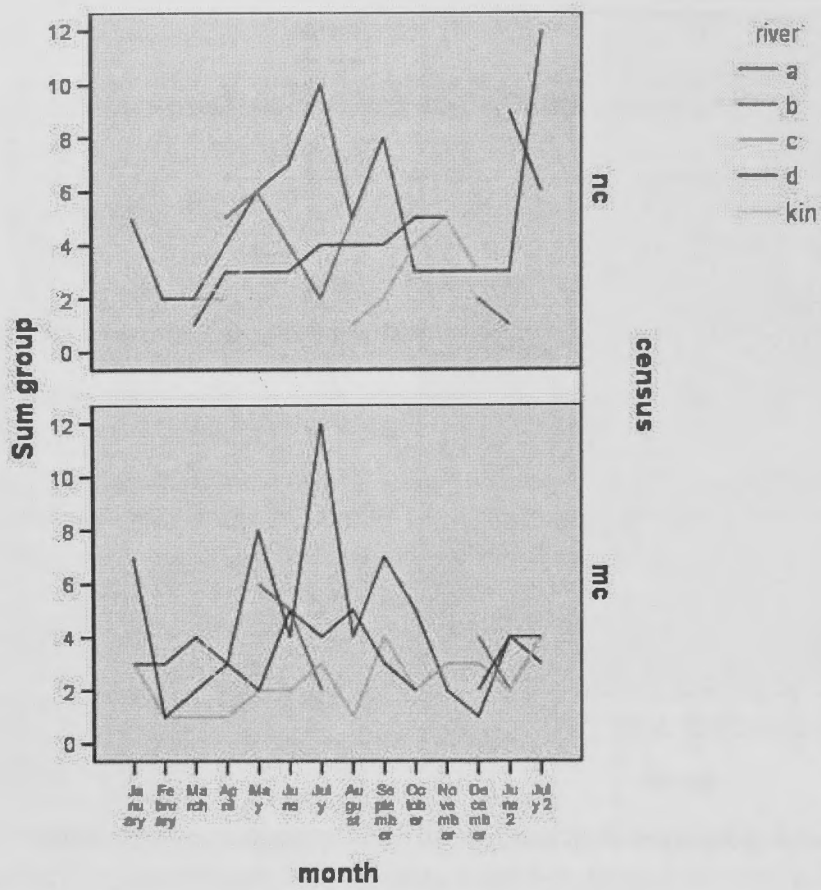


Figure 7 Summary of number of groups seen per river by morning and night census

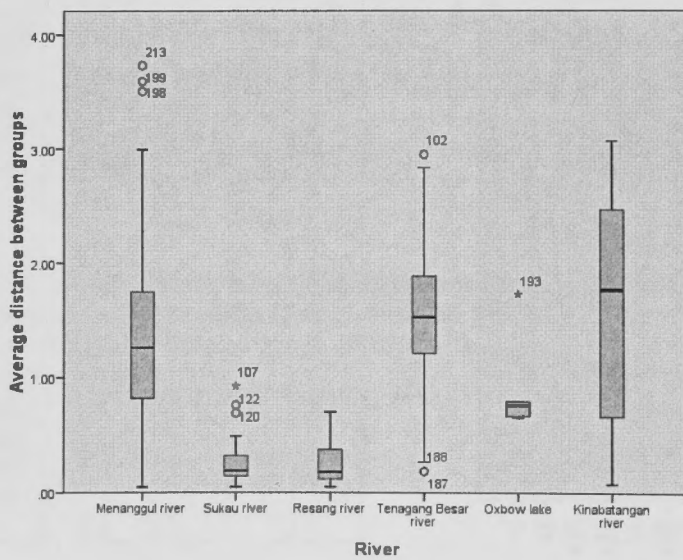


Figure 8 Distance between any groups during all census.

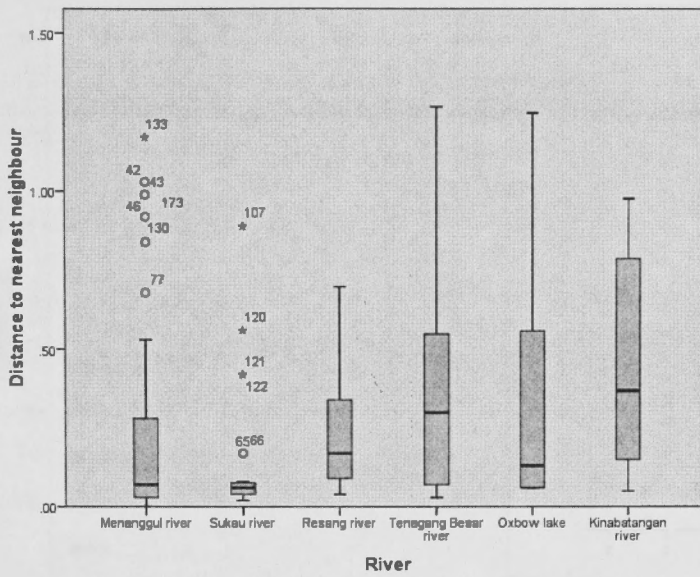


Figure 9 Distance to the nearest group over all census.

### Boat information

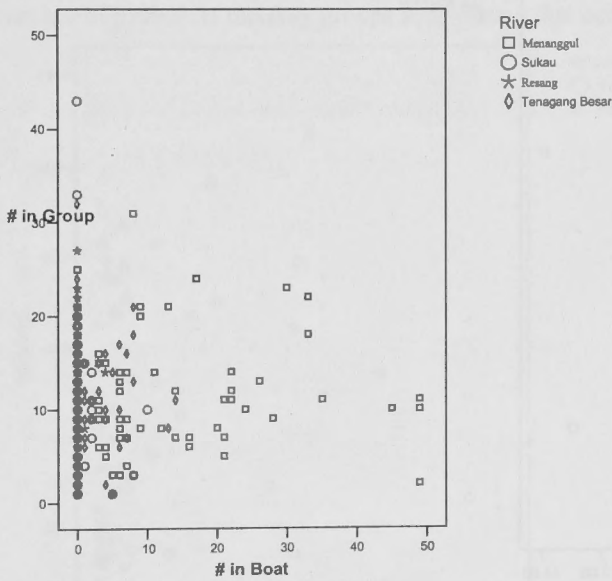


Figure 10 all groups by all census for number of people present at a single group (could be in more than one boat) versus number of proboscis monkeys in that group

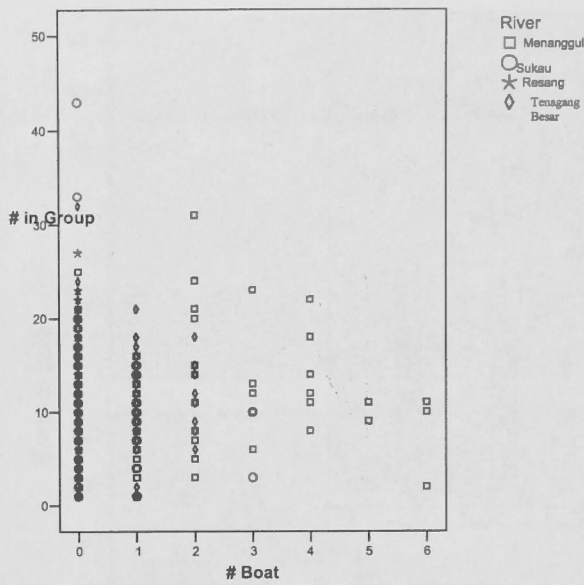


Figure 11 All groups all census number of boats at a single group versus number of proboscis monkeys in that group

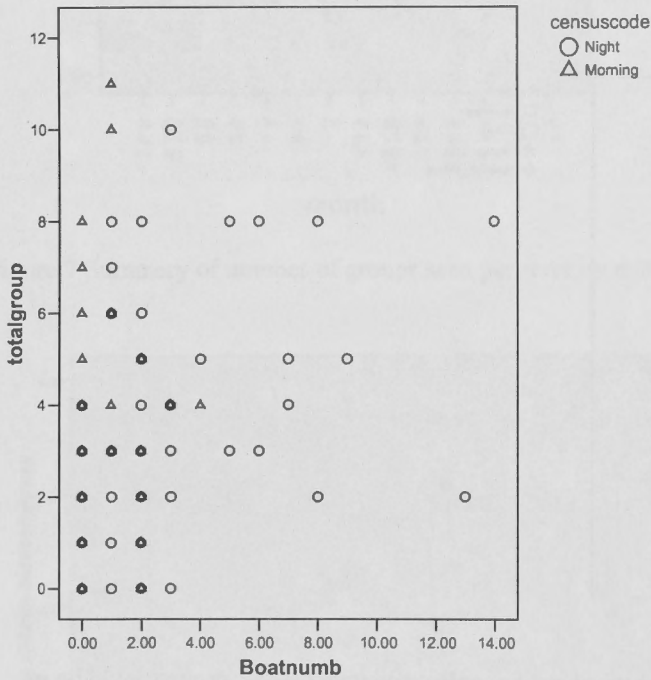


Figure 12 All river by all census number of boats in total on the river at that census by number of proboscis monkey groups seen during that census with night versus morning

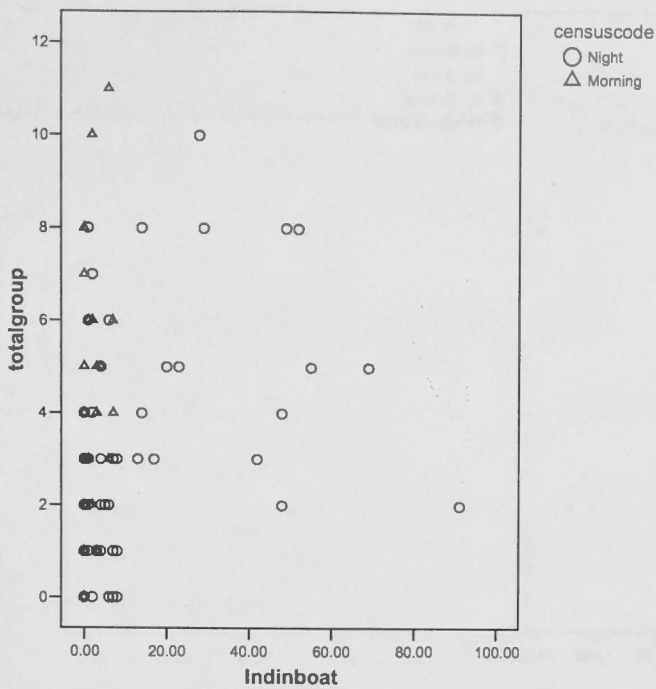


Figure 13 All river by all census number of people in boats in total on the river at that census by number of proboscis monkey groups seen during that census with night versus morning

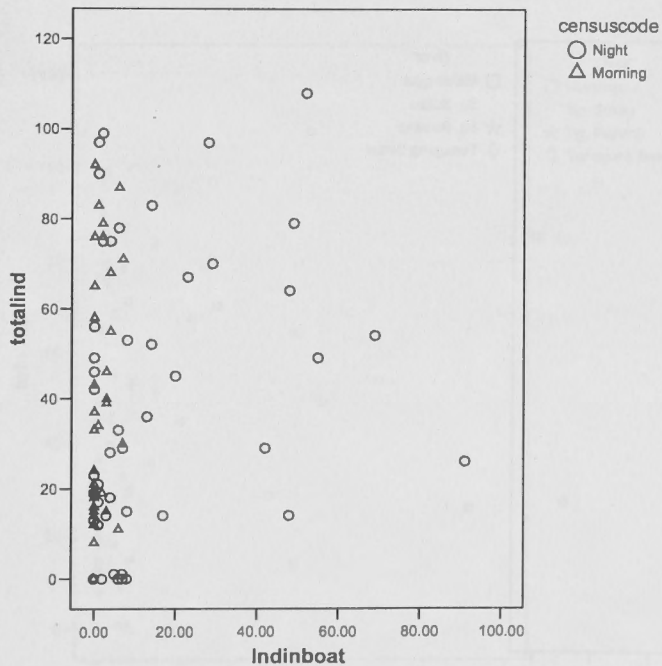


Figure 14 All river by all census number of people in boats in total on the river at that census by number of proboscis monkey individual seen during that census with night versus morning

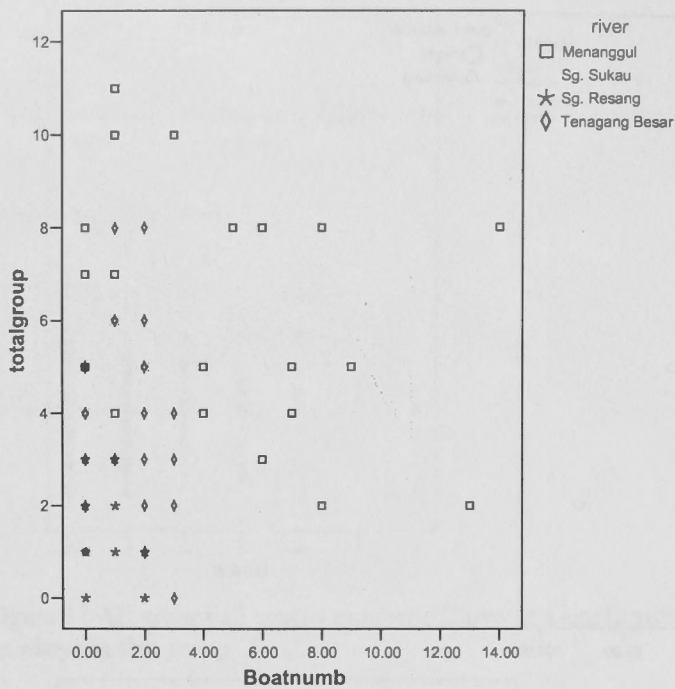


Figure 15 All river by all census number of boats on the river at a particular census by number of monkey groups seen at that census by river

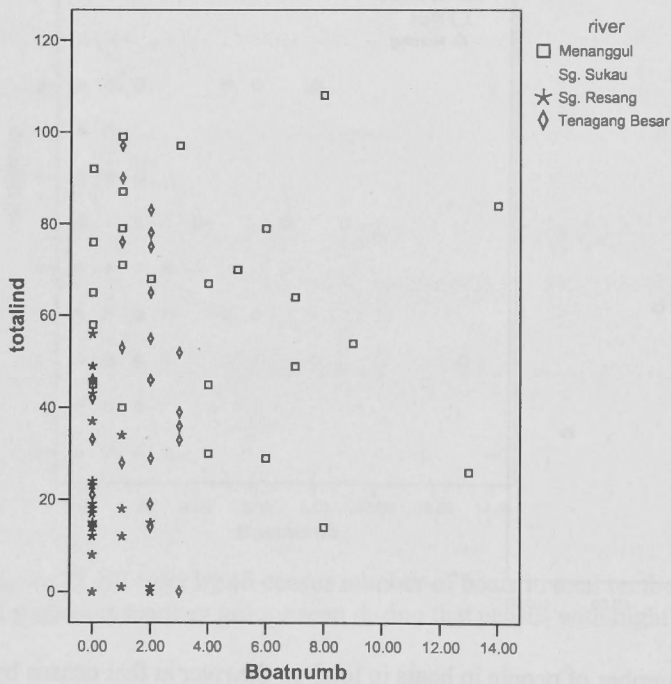


Figure 16 All river by all census number of boats on the river at a particular census by number of proboscis monkey seen at that census by river

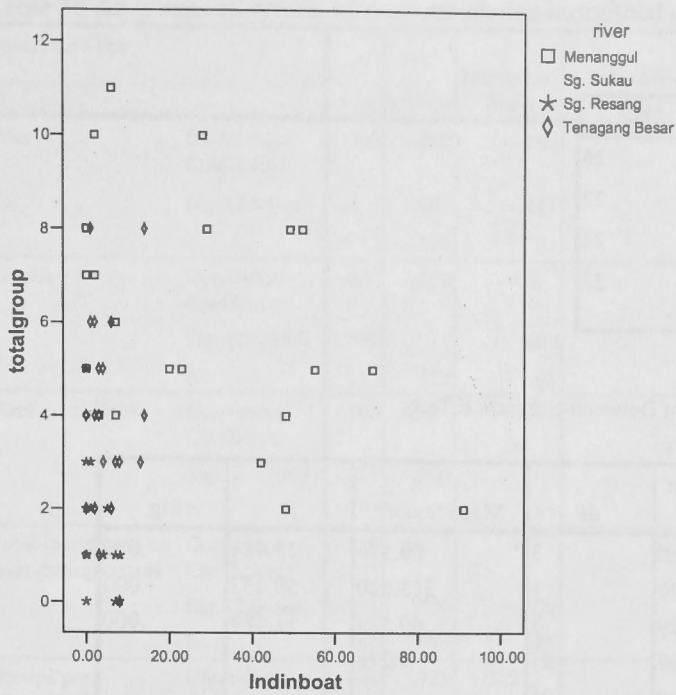


Figure 17 All river by all census number of people in boats on the river at a particular census by number of monkey groups seen at that census by river

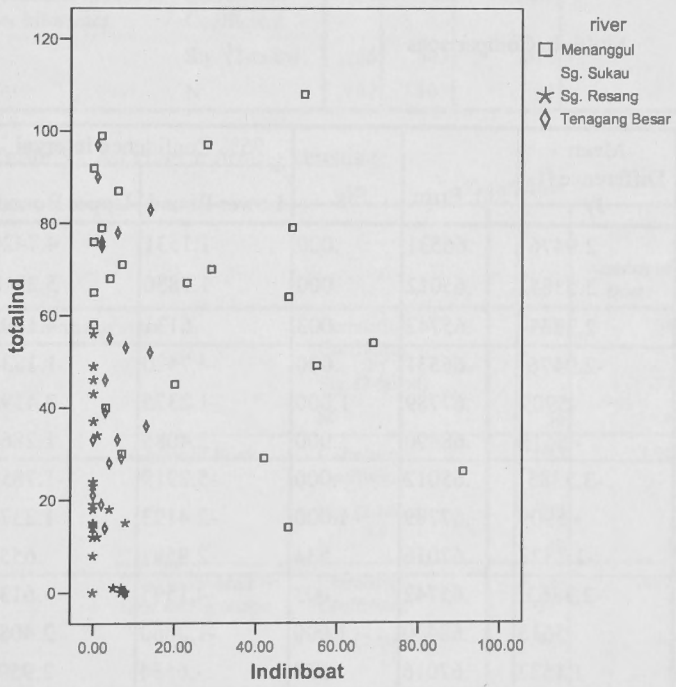


Figure 18 All river by all census number of people in boats on the river at a particular census by number of proboscis monkeys seen at that census by river

Table 29 Correlation of rivers with bonferroni correction.

Between-Subjects Factors

	Value Label	N	
river	1.00	Menanggul	26
	2.00	Sg. Sukau	22
	3.00	Sg. Resang	24
	4.00	Tenagang Besar	23

Tests of Between-Subjects Effects

Dependent Variable: Number of Boats

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	181.729 <sup>a</sup>	3	60.576	11.484	.000
Intercept	313.620	1	313.620	59.457	.000
river	181.729	3	60.576	11.484	.000
Error	479.997	91	5.275		
Total	999.000	95			
Corrected Total	661.726	94			

a. R Squared = .275 (Adjusted R Squared = .251)

Multiple Comparisons

Number of Boats  
Bonferroni

(I) river	(J) river	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Menanggul	Sg. Sukau	2.9476*	.66531	.000	1.1531	4.7420
	Sg. Resang	3.5385*	.65012	.000	1.7850	5.2919
	Tenagang Besar	2.3863*	.65742	.003	.6131	4.1595
Sg. Sukau	Menanggul	-2.9476*	.66531	.000	-4.7420	-1.1531
	Sg. Resang	.5909	.67789	1.000	-1.2375	2.4193
	Tenagang Besar	-.5613	.68490	1.000	-2.4086	1.2860
Sg. Resang	Menanggul	-3.5385*	.65012	.000	-5.2919	-1.7850
	Sg. Sukau	-.5909	.67789	1.000	-2.4193	1.2375
	Tenagang Besar	-1.1522	.67016	.534	-2.9597	.6554
Tenagang Besar	Menanggul	-2.3863*	.65742	.003	-4.1595	-.6131
	Sg. Sukau	.5613	.68490	1.000	-1.2860	2.4086
	Sg. Resang	1.1522	.67016	.534	-.6554	2.9597

Based on observed means.

The error term is Mean Square(Error) = 5.275.

\*. The mean difference is significant at the 0.05 level.

Table 30 All groups all census all river correlations

Spearman's rho		river	Census	Number of Boats	Total individuals on river during census	Groups per kilometer	Proboscis monkeys per kilometer
river	Correlation Coefficient	1.000	.000	-.165	-.190	.076	.139
	Sig. (2-tailed)	.	1.000	.111	.079	.435	.155
	N	112	112	95	86	107	107
Census	Correlation Coefficient	.000	1.000	-.456**	-.507**	.055	-.019
	Sig. (2-tailed)	1.000	.	.000	.000	.570	.843
	N	112	112	95	86	107	107
Number of Boats	Correlation Coefficient	-.165	-.456**	1.000	.902**	-.272**	-.249*
	Sig. (2-tailed)	.111	.000	.	.000	.008	.015
	N	95	95	95	86	95	95
Total individuals on river during census	Correlation Coefficient	-.190	-.507**	.902**	1.000	-.236*	-.228*
	Sig. (2-tailed)	.079	.000	.000	.	.029	.035
	N	86	86	86	86	86	86
Groups per kilometer	Correlation Coefficient	.076	.055	-.272**	-.236*	1.000	.834**
	Sig. (2-tailed)	.435	.570	.008	.029	.	.000
	N	107	107	95	86	107	107
Proboscis monkeys per kilometer	Correlation Coefficient	.139	-.019	-.249*	-.228*	.834**	1.000
	Sig. (2-tailed)	.155	.843	.015	.035	.000	.
	N	107	107	95	86	107	107

Table 31 All river morning census

		Correlations				
		river	Number of Boats	Total individuals on river during census	Groups per kilometer	Proboscis monkeys per kilometer
Spearman's rho river	Correlation Coefficient	1.000	.045	-.134	.146	.177
	Sig. (2-tailed)	.	.778	.434	.301	.208
	N	56	42	36	52	52
Number of Boats	Correlation Coefficient	.045	1.000	.880**	-.107	-.126
	Sig. (2-tailed)	.778	.	.000	.499	.425
	N	42	42	36	42	42
Total individuals on river during census	Correlation Coefficient	-.134	.880**	1.000	.027	-.027
	Sig. (2-tailed)	.434	.000	.	.877	.874
	N	36	36	36	36	36
Groups per kilometer	Correlation Coefficient	.146	-.107	.027	1.000	.848**
	Sig. (2-tailed)	.301	.499	.877	.	.000
	N	52	42	36	52	52
Proboscis monkeys per kilometer	Correlation Coefficient	.177	-.126	-.027	.848**	1.000
	Sig. (2-tailed)	.208	.425	.874	.000	.
	N	52	42	36	52	52

\*\* . Correlation is significant at the 0.01 level (2-tailed).



Table 32 All river night census

Correlations

			river	Number of Boats	Total individuals on river during census	Groups per kilometer	Proboscis monkeys per kilometer
Spearman's rho	river	Correlation Coefficient	1.000	-.438**	-.406**	.007	.097
		Sig. (2-tailed)	.	.001	.003	.962	.481
		N	56	53	50	55	55
	Number of Boats	Correlation Coefficient	-.438**	1.000	.906**	-.301*	-.318*
		Sig. (2-tailed)	.001	.	.000	.029	.020
		N	53	53	50	53	53
	Total individuals on river during census	Correlation Coefficient	-.406**	.906**	1.000	-.285*	-.308*
		Sig. (2-tailed)	.003	.000	.	.045	.030
		N	50	50	50	50	50
	Groups per kilometer	Correlation Coefficient	.007	-.301*	-.285*	1.000	.837**
		Sig. (2-tailed)	.962	.029	.045	.	.000
		N	55	53	50	55	55
	Proboscis monkeys per kilometer	Correlation Coefficient	.097	-.318*	-.308*	.837**	1.000
		Sig. (2-tailed)	.481	.020	.030	.000	.
		N	55	53	50	55	55

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Table 33 Menanggal all census all groups correlations

Spearman's rho		Census	Number of Boats	Total individuals on river during census	Groups per kilometer	Proboscis monkeys per kilometer
Census	Correlation Coefficient	1.000	-.811**	-.801**	.013	-.049
	Sig. (2-tailed)	.	.000	.000	.946	.806
	N	28	26	24	28	28
Number of Boats	Correlation Coefficient	-.811**	1.000	.972**	-.144	-.105
	Sig. (2-tailed)	.000	.	.000	.482	.610
	N	26	26	24	26	26
Total individuals on river during census	Correlation Coefficient	-.801**	.972**	1.000	-.160	-.163
	Sig. (2-tailed)	.000	.000	.	.454	.448
	N	24	24	24	24	24
Groups per kilometer	Correlation Coefficient	.013	-.144	-.160	1.000	.921**
	Sig. (2-tailed)	.946	.482	.454	.	.000
	N	28	26	24	28	28
Proboscis monkeys per kilometer	Correlation Coefficient	-.049	-.105	-.163	.921**	1.000
	Sig. (2-tailed)	.806	.610	.448	.000	.
	N	28	26	24	28	28

Table 34 Menanggal morning census

Correlations

			Number of Boats	Total individuals on river during census	Groups per kilometer	Proboscis monkeys per kilometer
Spearman's rho	Number of Boats	Correlation Coefficient	1.000	.908**	.010	-.015
		Sig. (2-tailed)	.	.000	.977	.963
		N	12	11	12	12
	Total individuals on river during census	Correlation Coefficient	.908**	1.000	.153	-.038
		Sig. (2-tailed)	.000	.	.653	.911
		N	11	11	11	11
	Groups per kilometer	Correlation Coefficient	.010	.153	1.000	.875**
		Sig. (2-tailed)	.977	.653	.	.000
		N	12	11	14	14
	Proboscis monkeys per kilometer	Correlation Coefficient	-.015	-.038	.875**	1.000
		Sig. (2-tailed)	.963	.911	.000	.
		N	12	11	14	14

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 35 Menanggul night census

Correlations

			Number of Boats	Total individuals on river during census	Groups per kilometer	Proboscis monkeys per kilometer
Spearman's rho	Number of Boats	Correlation Coefficient	1.000	.918**	-.370	-.287
		Sig. (2-tailed)	.	.000	.193	.320
		N	14	13	14	14
	Total individuals on river during census	Correlation Coefficient	.918**	1.000	-.378	-.341
		Sig. (2-tailed)	.000	.	.202	.254
		N	13	13	13	13
	Groups per kilometer	Correlation Coefficient	-.370	-.378	1.000	.916**
		Sig. (2-tailed)	.193	.202	.	.000
		N	14	13	14	14
	Proboscis monkeys per kilometer	Correlation Coefficient	-.287	-.341	.916**	1.000
		Sig. (2-tailed)	.320	.254	.000	.
		N	14	13	14	14

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 36 Sukau all census all groups

Correlations

			Census	Number of Boats	Total individuals on river during census	Groups per kilometer	Proboscis monkeys per kilometer
Spearman's rho	Census	Correlation Coefficient	1.000	-.193	-.259	-.087	-.135
		Sig. (2-tailed)	.	.389	.283	.688	.528
		N	28	22	19	24	24
	Number of Boats	Correlation Coefficient	-.193	1.000	.684**	-.125	-.192
		Sig. (2-tailed)	.389	.	.001	.578	.393
		N	22	22	19	22	22
	Total individuals on river during census	Correlation Coefficient	-.259	.684**	1.000	.086	-.059
		Sig. (2-tailed)	.283	.001	.	.726	.812
		N	19	19	19	19	19
	Groups per kilometer	Correlation Coefficient	-.087	-.125	.086	1.000	.907**
		Sig. (2-tailed)	.688	.578	.726	.	.000
		N	24	22	19	24	24
	Proboscis monkeys per kilometer	Correlation Coefficient	-.135	-.192	-.059	.907**	1.000
		Sig. (2-tailed)	.528	.393	.812	.000	.
		N	24	22	19	24	24

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 37 Sukau morning census

Correlations

			Number of Boats	Total individuals on river during census	Groups per kilometer	Proboscis monkeys per kilometer
Spearman's rho	Number of Boats	Correlation Coefficient	1.000	.681	.086	-.152
		Sig. (2-tailed)	.	.092	.827	.696
		N	9	7	9	9
	Total individuals on river during census	Correlation Coefficient	.681	1.000	.592	.120
		Sig. (2-tailed)	.092	.	.162	.797
		N	7	7	7	7
	Groups per kilometer	Correlation Coefficient	.086	.592	1.000	.892**
		Sig. (2-tailed)	.827	.162	.	.000
		N	9	7	11	11
	Proboscis monkeys per kilometer	Correlation Coefficient	-.152	.120	.892**	1.000
		Sig. (2-tailed)	.696	.797	.000	.
		N	9	7	11	11

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 38 Sukau night census

			Correlations			
			Number of Boats	Total individuals on river during census	Groups per kilometer	Proboscis monkeys per kilometer
Spearman's rho	Number of Boats	Correlation Coefficient	1.000	.685*	-.228	-.224
		Sig. (2-tailed)	.	.014	.453	.462
		N	13	12	13	13
	Total individuals on river during census	Correlation Coefficient	.685*	1.000	-.141	-.173
		Sig. (2-tailed)	.014	.	.662	.591
		N	12	12	12	12
	Groups per kilometer	Correlation Coefficient	-.228	-.141	1.000	.930**
		Sig. (2-tailed)	.453	.662	.	.000
		N	13	12	13	13
	Proboscis monkeys per kilometer	Correlation Coefficient	-.224	-.173	.930**	1.000
		Sig. (2-tailed)	.462	.591	.000	.
		N	13	12	13	13

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

Table 39 Resang all census all groups

			Correlations				
			Census	Number of Boats	Total individuals on river during census	Groups per kilometer	Proboscis monkeys per kilometer
Spearman's rho	Census	Correlation Coefficient	1.000	-.548**	-.548**	.267	.146
		Sig. (2-tailed)	.	.006	.007	.170	.458
		N	28	24	23	28	28
	Number of Boats	Correlation Coefficient	-.548**	1.000	.994**	-.408*	-.428*
		Sig. (2-tailed)	.006	.	.000	.048	.037
		N	24	24	23	24	24
	Total individuals on river during census	Correlation Coefficient	-.548**	.994**	1.000	-.422*	-.442*
		Sig. (2-tailed)	.007	.000	.	.045	.035
		N	23	23	23	23	23
	Groups per kilometer	Correlation Coefficient	.267	-.408*	-.422*	1.000	.758**
		Sig. (2-tailed)	.170	.048	.045	.	.000
		N	28	24	23	28	28
	Proboscis monkeys per kilometer	Correlation Coefficient	.146	-.428*	-.442*	.758**	1.000
		Sig. (2-tailed)	.458	.037	.035	.000	.
		N	28	24	23	28	28

\*\*. Correlation is significant at the 0.01 level (2-tailed).

\*. Correlation is significant at the 0.05 level (2-tailed).

Table 40 Resang morning census

## Correlations

			Number of Boats	Total individuals on river during census	Groups per kilometer	Proboscis monkeys per kilometer
Spearman's rho	Number of Boats	Correlation Coefficient	1.000	1.000**	.503	.481
		Sig. (2-tailed)	.	.	.096	.113
		N	12	11	12	12
	Total individuals on river during census	Correlation Coefficient	1.000**	1.000	.518	.501
		Sig. (2-tailed)	.	.	.103	.116
		N	11	11	11	11
	Groups per kilometer	Correlation Coefficient	.503	.518	1.000	.733**
		Sig. (2-tailed)	.096	.103	.	.003
		N	12	11	14	14
	Proboscis monkeys per kilometer	Correlation Coefficient	.481	.501	.733**	1.000
		Sig. (2-tailed)	.113	.116	.003	.
		N	12	11	14	14

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 41 Resang night census

## Correlations

			Number of Boats	Total individuals on river during census	Groups per kilometer	Proboscis monkeys per kilometer
Spearman's rho	Number of Boats	Correlation Coefficient	1.000	.977**	-.617*	-.622*
		Sig. (2-tailed)	.	.000	.033	.031
		N	12	12	12	12
	Total individuals on river during census	Correlation Coefficient	.977**	1.000	-.603*	-.600*
		Sig. (2-tailed)	.000	.	.038	.039
		N	12	12	12	12
	Groups per kilometer	Correlation Coefficient	-.617*	-.603*	1.000	.824**
		Sig. (2-tailed)	.033	.038	.	.000
		N	12	12	14	14
	Proboscis monkeys per kilometer	Correlation Coefficient	-.622*	-.600*	.824**	1.000
		Sig. (2-tailed)	.031	.039	.000	.
		N	12	12	14	14

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Table 42 Tenang Besar all census all groups

## Correlations

		Census	Number of Boats	Total individuals on river during census	Groups per kilometer	Proboscis monkeys per kilometer
Spearman's rho	Census	1.000				
	Correlation Coefficient		-.232	-.530*	.038	-.200
	Sig. (2-tailed)		.288	.016	.850	.318
	N	28	23	20	27	27
Number of Boats	Correlation Coefficient	-.232	1.000	.652**	-.230	-.161
	Sig. (2-tailed)	.288		.002	.290	.464
	N	23	23	20	23	23
Total individuals on river during census	Correlation Coefficient	-.530*	.652**	1.000	-.103	-.044
	Sig. (2-tailed)	.016	.002		.667	.854
	N	20	20	20	20	20
Groups per kilometer	Correlation Coefficient	.038	-.230	-.103	1.000	.897**
	Sig. (2-tailed)	.850	.290	.667		.000
	N	27	23	20	27	27
Proboscis monkeys per kilometer	Correlation Coefficient	-.200	-.161	-.044	.897**	1.000
	Sig. (2-tailed)	.318	.464	.854	.000	
	N	27	23	20	27	27

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 43 Tenagang Besar morning census

Correlations

			Number of Boats	Total individuals on river during census	Groups per kilometer	Proboscis monkeys per kilometer
Spearman's rho	Number of Boats	Correlation Coefficient	1.000	.827*	.058	.098
		Sig. (2-tailed)		.022	.882	.803
		N	9	7	9	9
Total individuals on river during census	Correlation Coefficient	.827*	1.000	.624	.551	
	Sig. (2-tailed)	.022		.134	.200	
	N	7	7	7	7	
Groups per kilometer	Correlation Coefficient	.058	.624	1.000	.948**	
	Sig. (2-tailed)	.882	.134		.000	
	N	9	7	13	13	
Proboscis monkeys per kilometer	Correlation Coefficient	.098	.551	.948**	1.000	
	Sig. (2-tailed)	.803	.200	.000		
	N	9	7	13	13	

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 44 Tenagang Besar night census

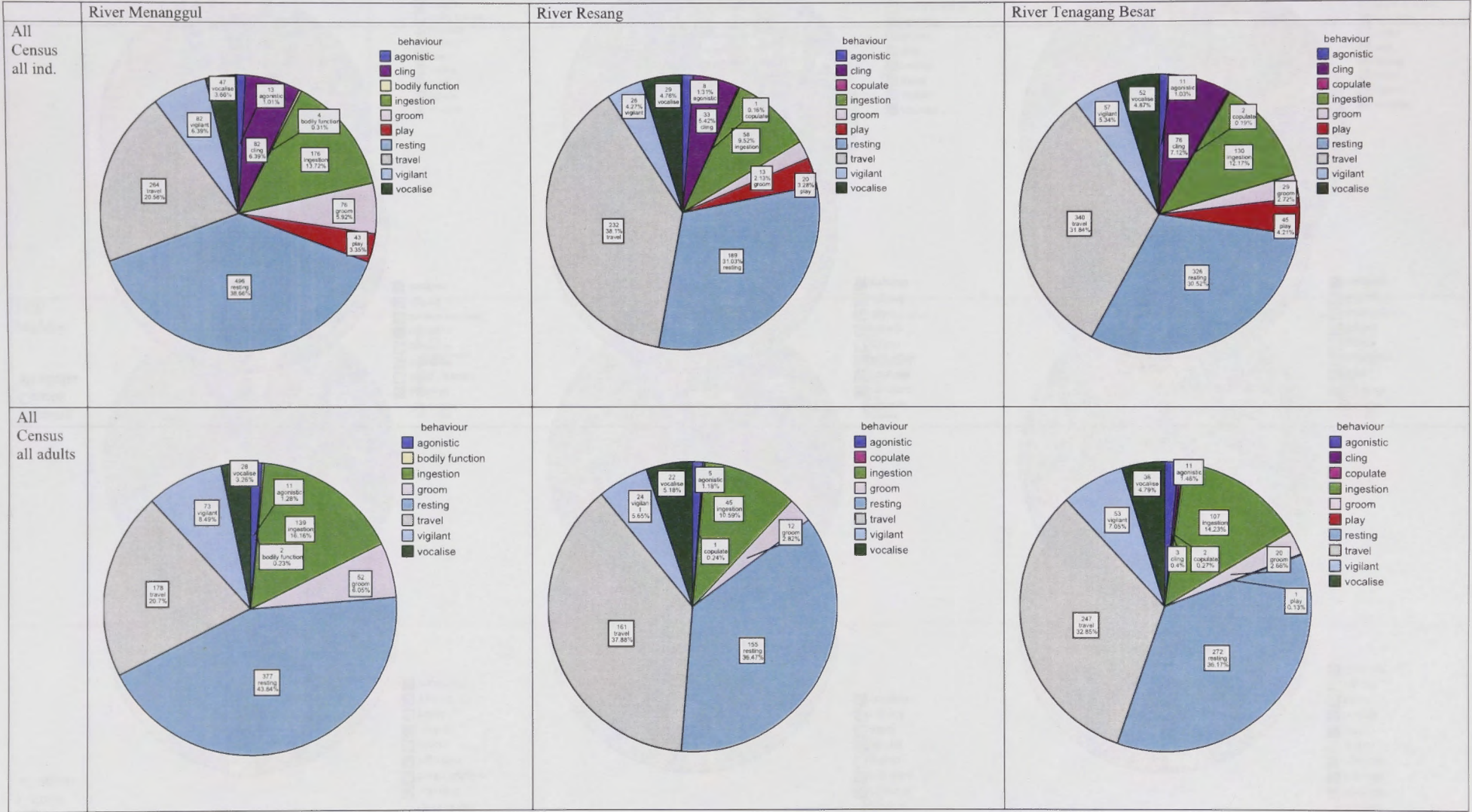
Correlations

			Number of Boats	Total individuals on river during census	Groups per kilometer	Proboscis monkeys per kilometer
Spearman's rho	Number of Boats	Correlation Coefficient	1.000	.580*	-.309	-.400
		Sig. (2-tailed)	.	.038	.282	.156
		N	14	13	14	14
	Total individuals on river during census	Correlation Coefficient	.580*	1.000	-.168	-.334
		Sig. (2-tailed)	.038	.	.584	.264
		N	13	13	13	13
	Groups per kilometer	Correlation Coefficient	-.309	-.168	1.000	.912**
		Sig. (2-tailed)	.282	.584	.	.000
		N	14	13	14	14
	Proboscis monkeys per kilometer	Correlation Coefficient	-.400	-.334	.912**	1.000
		Sig. (2-tailed)	.156	.264	.000	.
		N	14	13	14	14

\*. Correlation is significant at the 0.05 level (2-tailed).

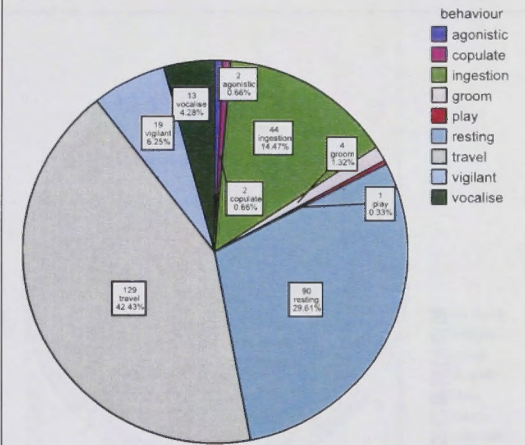
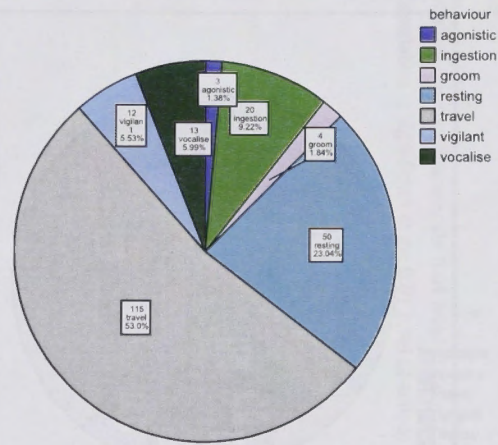
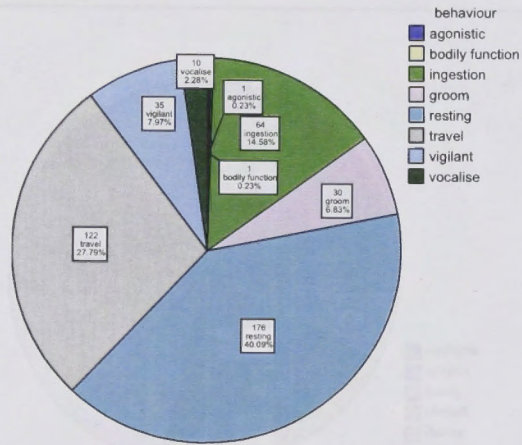
\*\* . Correlation is significant at the 0.01 level (2-tailed).

# Appendix F Frequency of Behavioral Profile

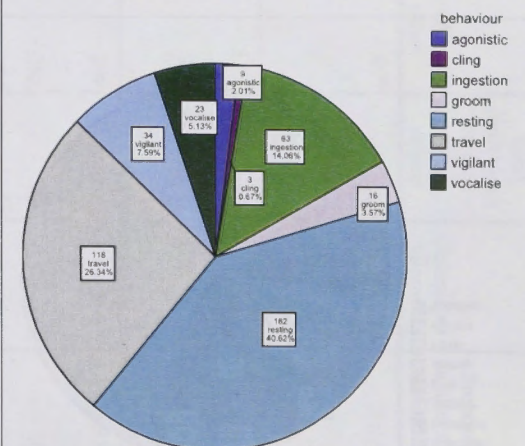
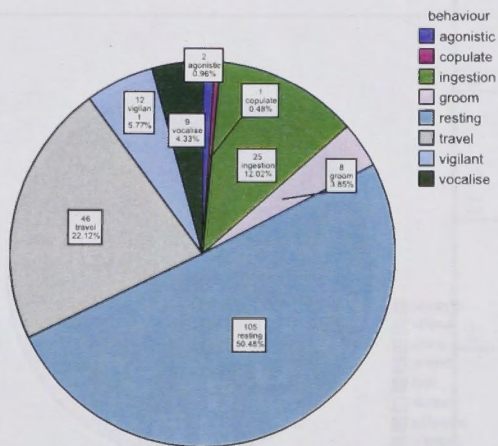
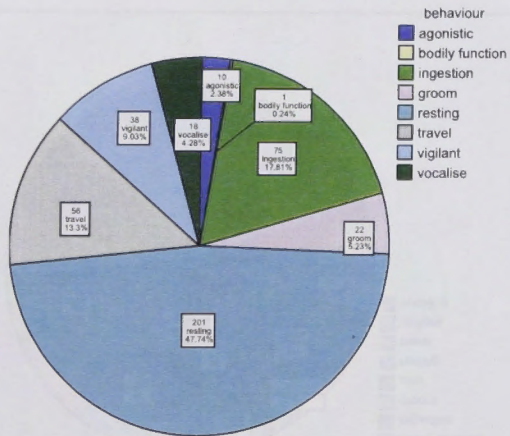




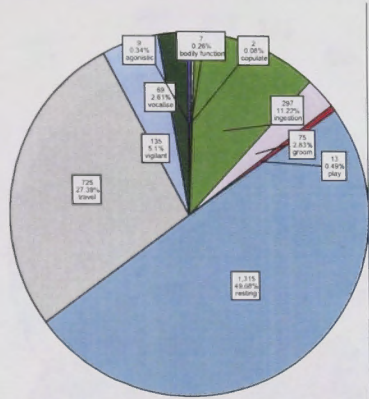
Morning  
Census  
all adults



Evening  
Census  
all adults

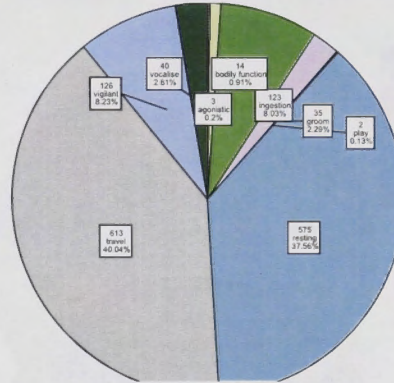


FDf 5-8

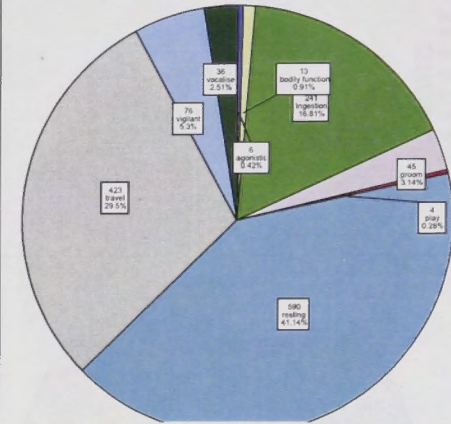


- behaviours combined
- agonistic
  - copulate
  - bodily function
  - ingestion
  - groom
  - play
  - resting
  - travel
  - vigilant
  - vocalise

River

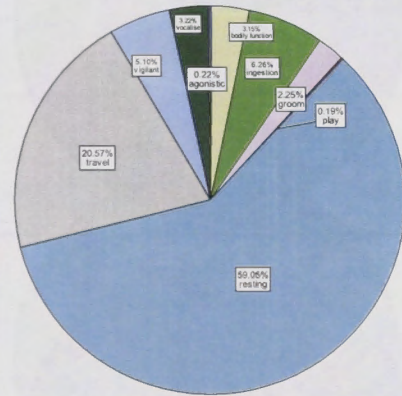


- behaviours combined
- agonistic
  - bodily function
  - ingestion
  - groom
  - play
  - resting
  - travel
  - vigilant
  - vocalise

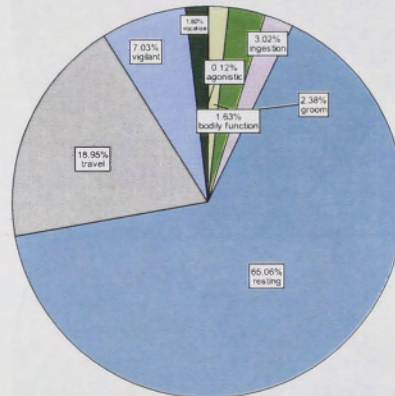


- behaviours combined
- agonistic
  - bodily function
  - ingestion
  - groom
  - play
  - resting
  - travel
  - vigilant
  - vocalise

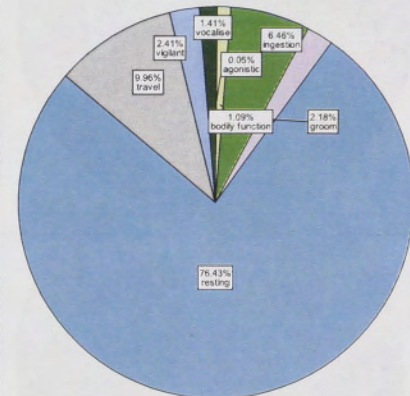
FDf Middy



- behaviours combined
- agonistic
  - cling
  - copulate
  - bodily function
  - ingestion
  - groom
  - play
  - resting
  - travel
  - vigilant
  - vocalise

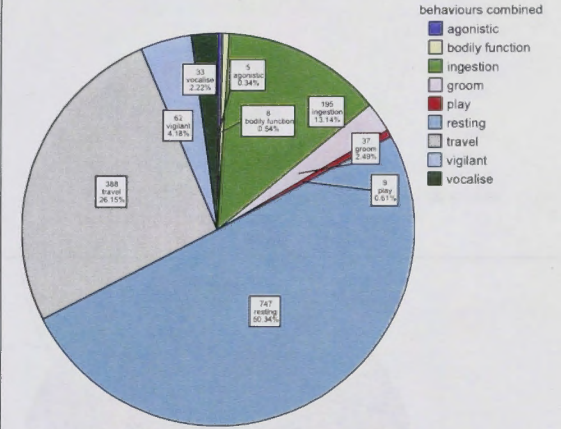
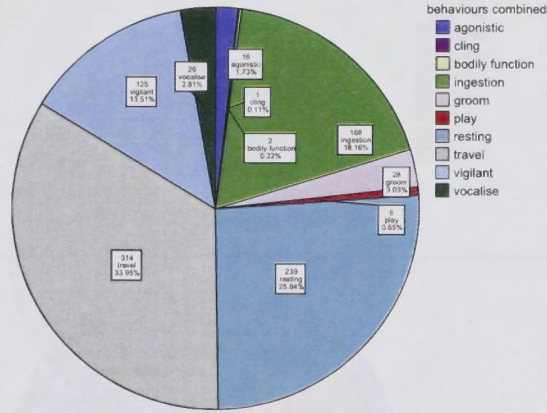
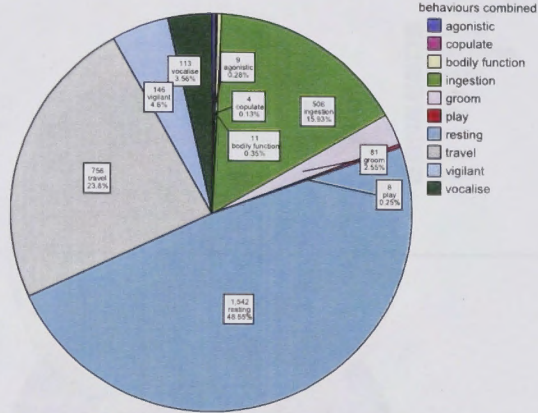


- behaviours combined
- agonistic
  - cling
  - copulate
  - bodily function
  - ingestion
  - groom
  - play
  - resting
  - travel
  - vigilant
  - vocalise

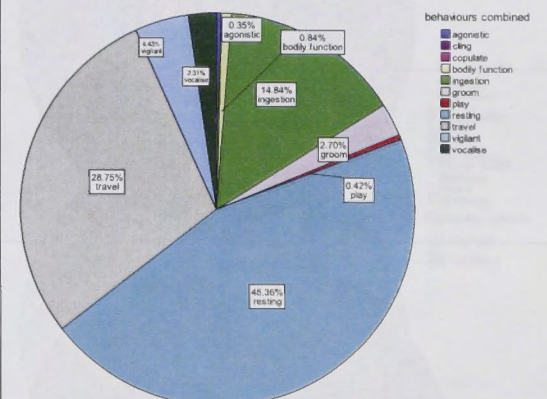
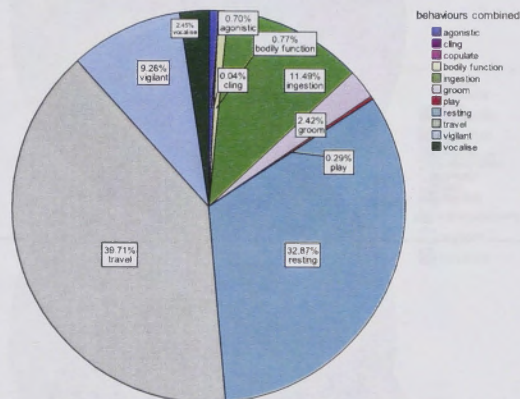
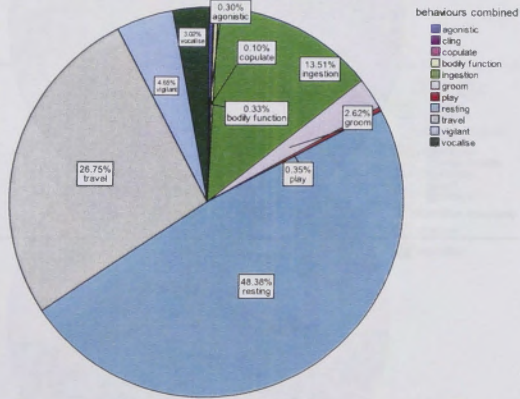


- behaviours combined
- agonistic
  - cling
  - copulate
  - bodily function
  - ingestion
  - groom
  - play
  - resting
  - travel
  - vigilant
  - vocalise

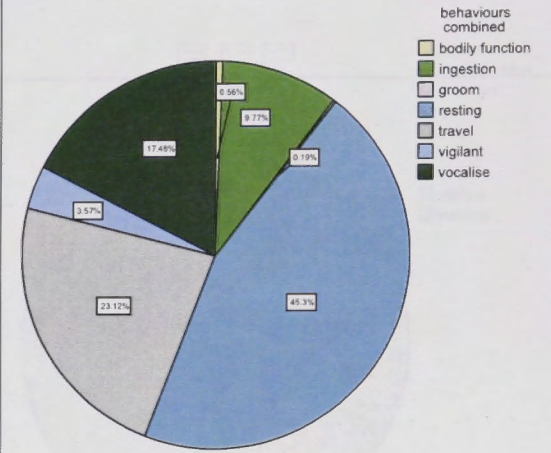
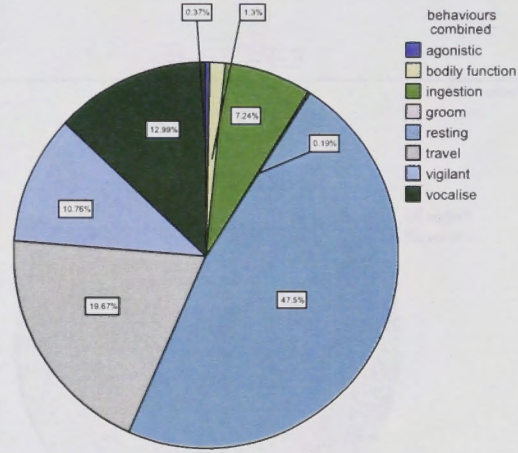
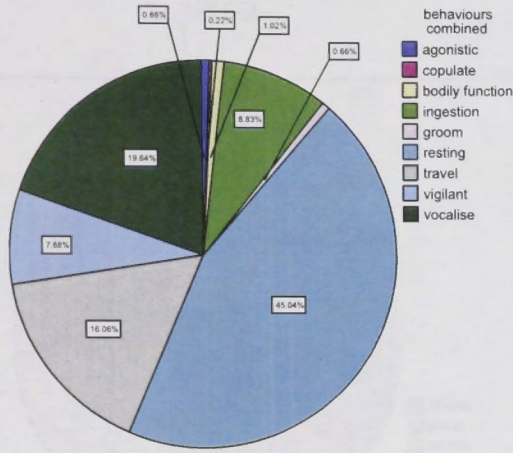
FDF 15-18



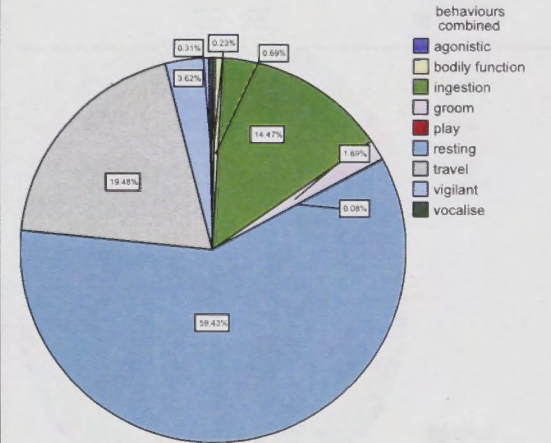
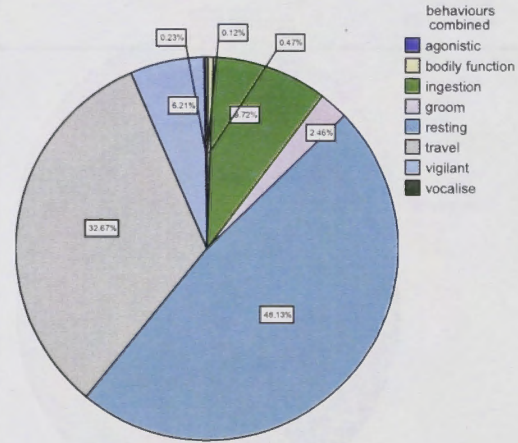
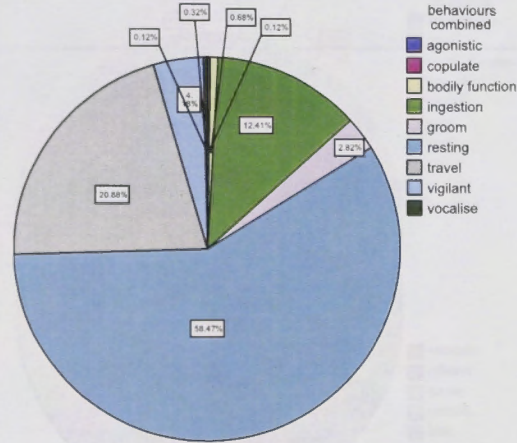
FDF 5-8  
15-18



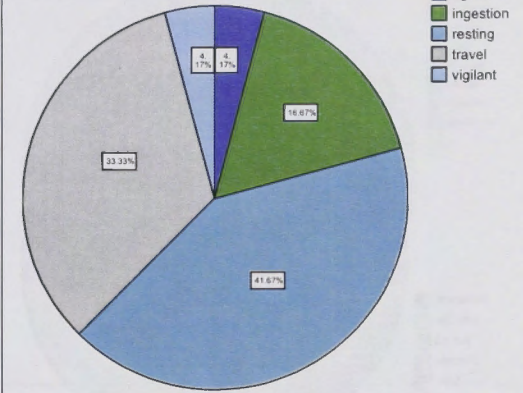
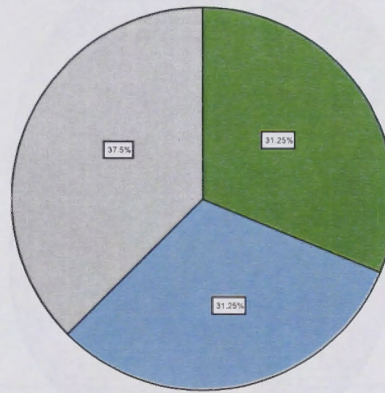
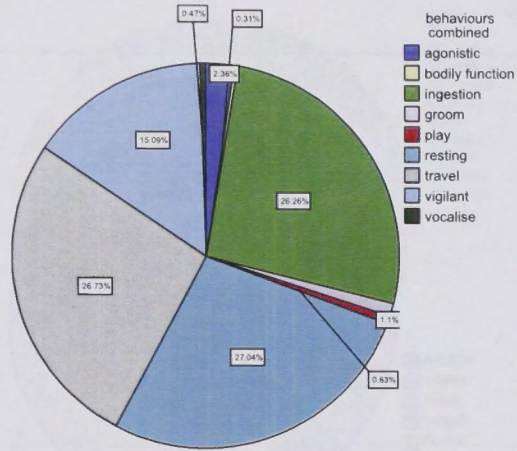
Adult male



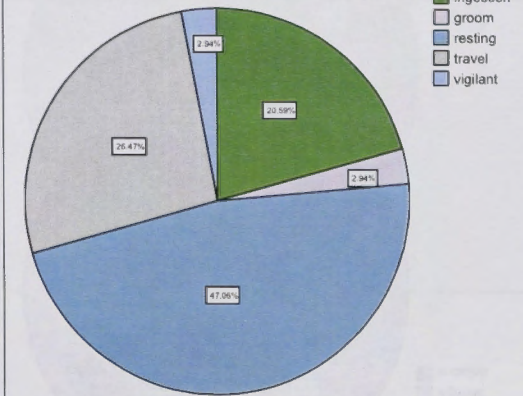
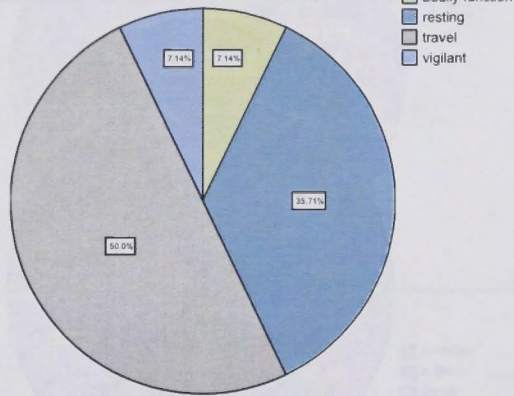
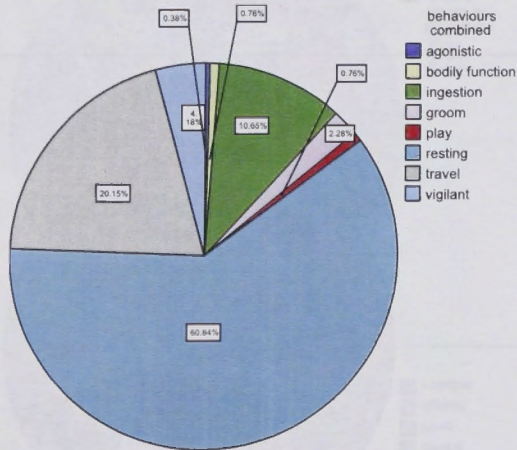
Adult female

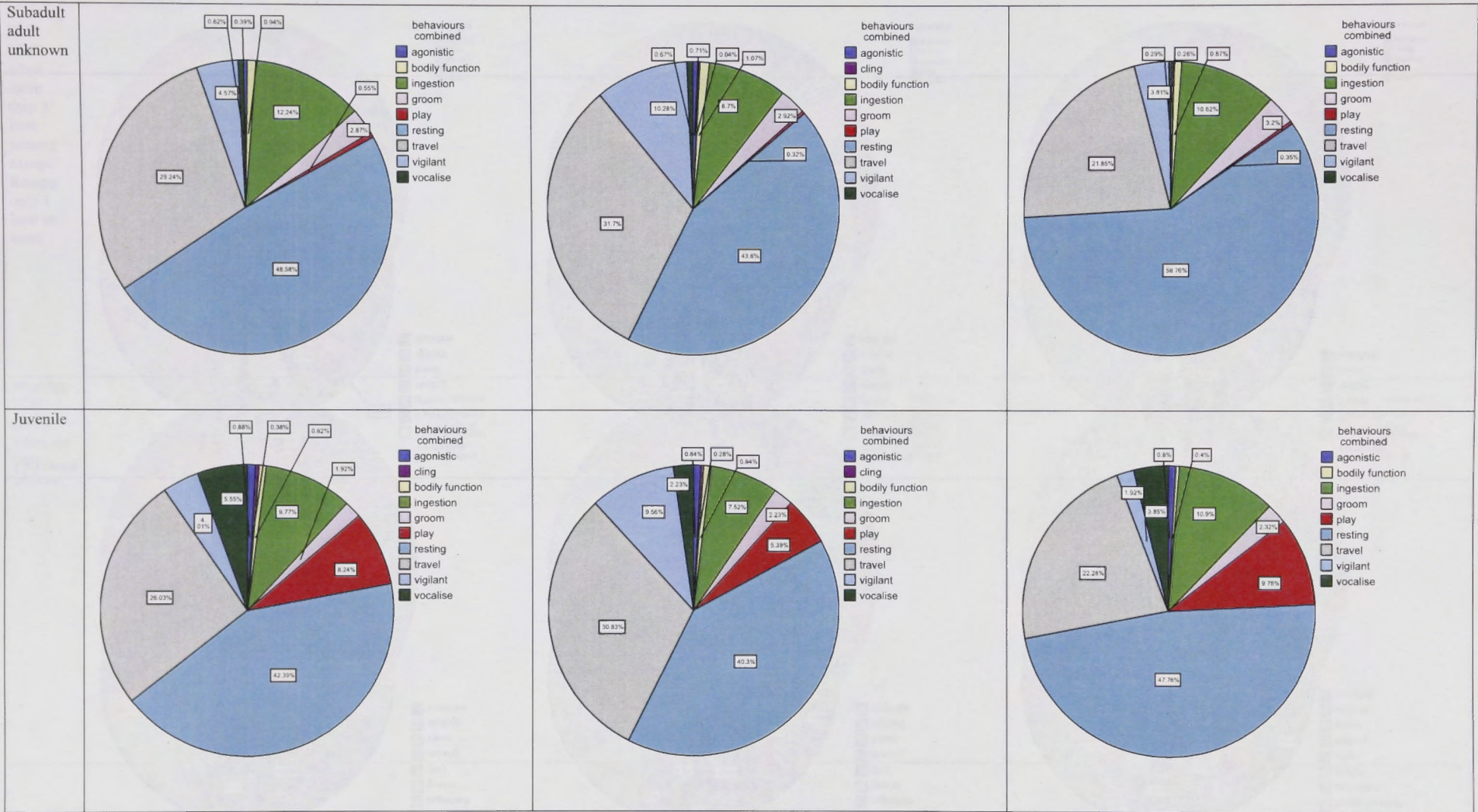


Subadult male

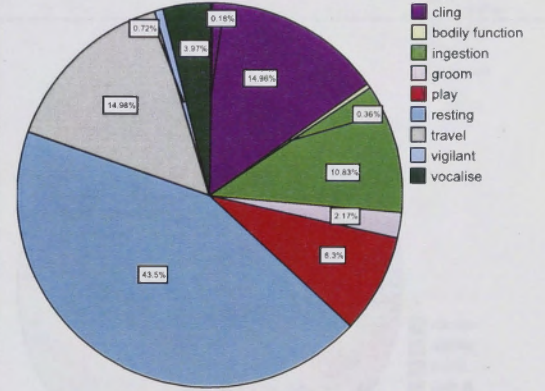
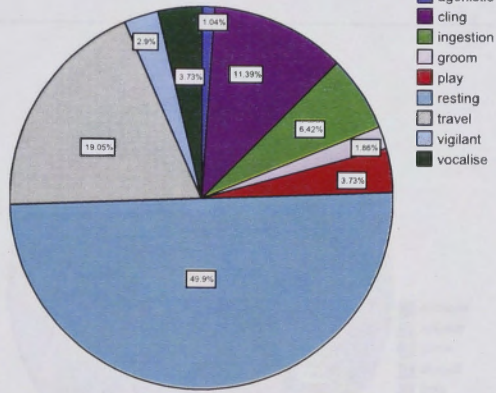
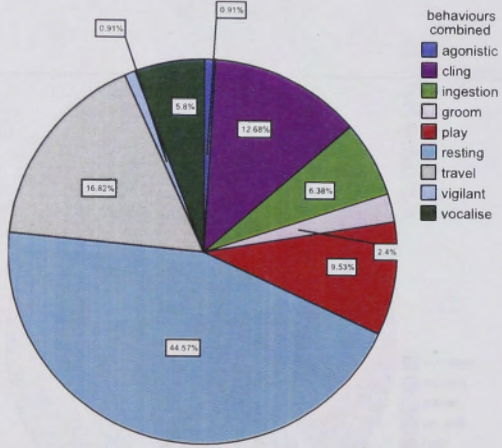


Subadult female

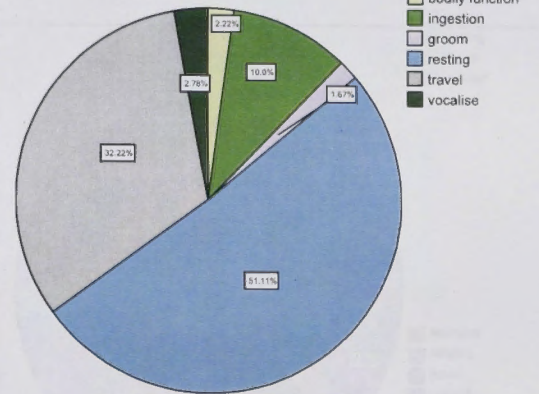
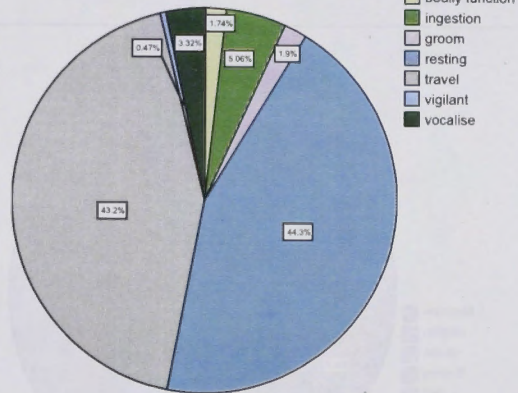
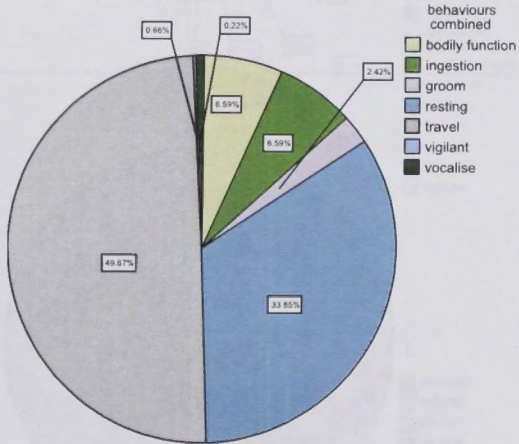




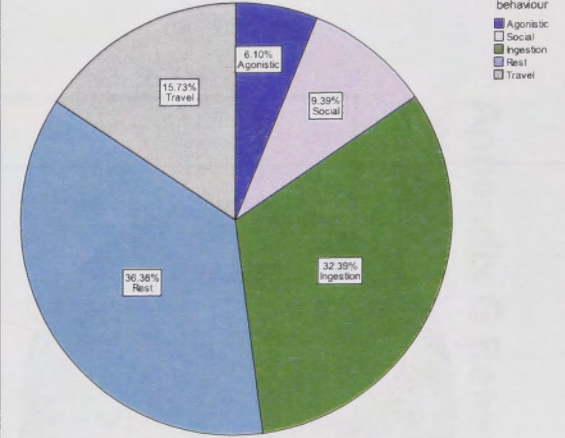
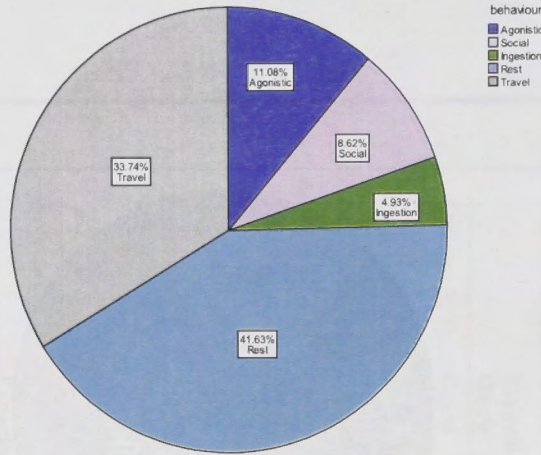
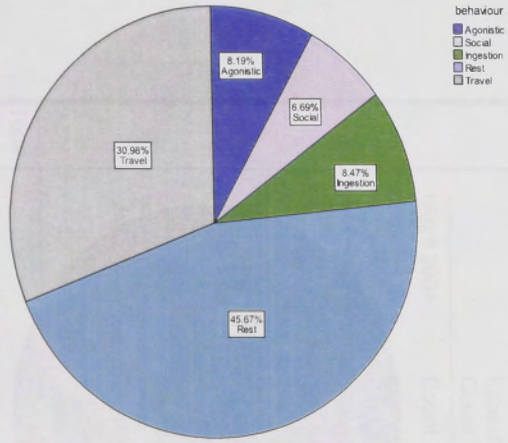
Infant



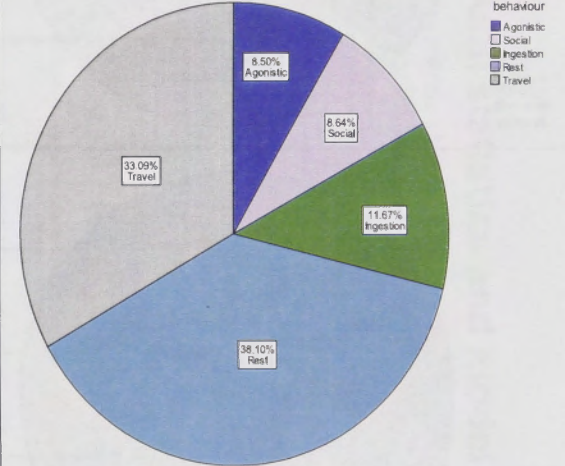
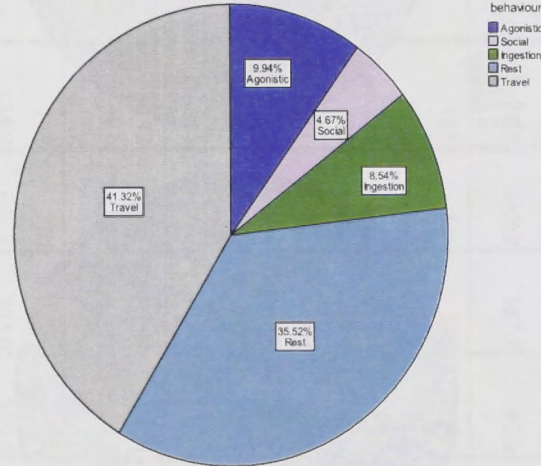
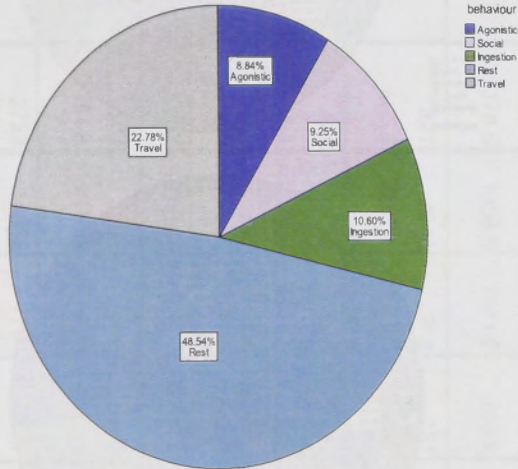
Unknown



Morning  
FDF  
OMG  
when  
more  
than 2  
boat  
present  
except  
Resang  
only 1  
boat or  
more

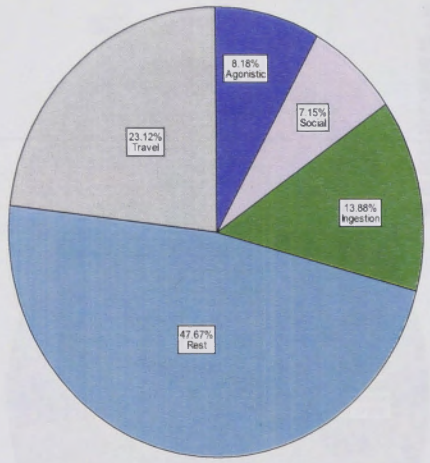


Morning  
FDF  
OMG  
when  
no  
boat  
present

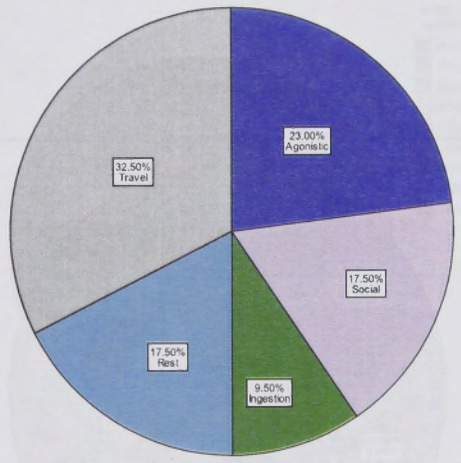




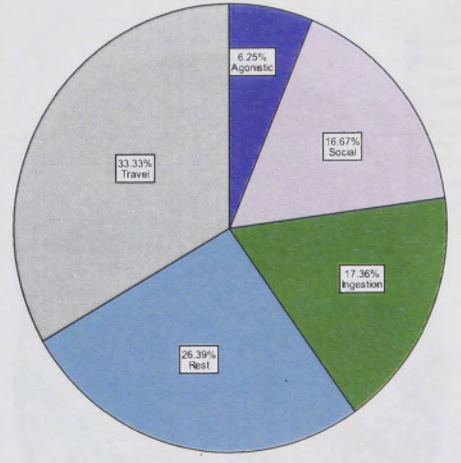
Evening FDF  
OMG  
when more  
than 2  
boat  
present  
except  
Resang  
only 1  
boat or  
more



behaviour  
 Agonistic  
 Social  
 Ingestion  
 Rest  
 Travel

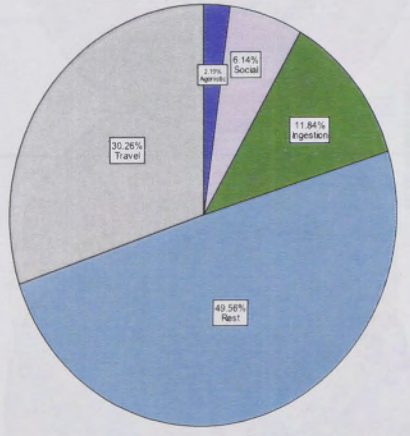


behaviour  
 Agonistic  
 Social  
 Ingestion  
 Rest  
 Travel

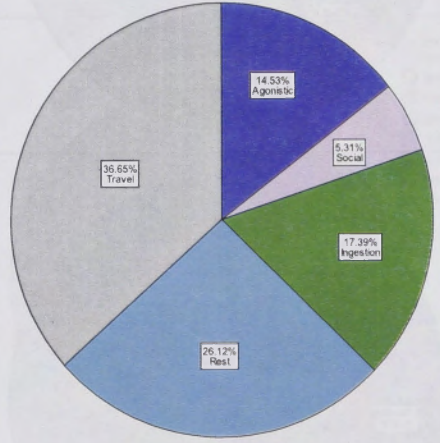


behaviour  
 Agonistic  
 Social  
 Ingestion  
 Rest  
 Travel

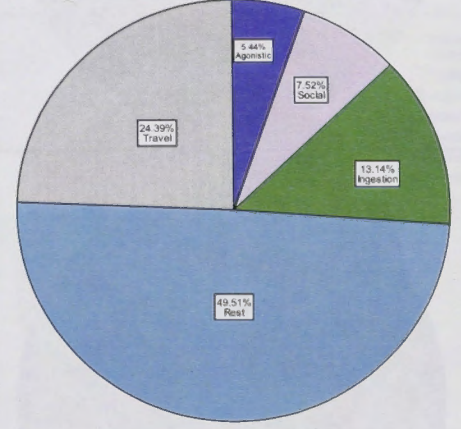
Evening FDF  
OMG  
when no  
boat  
present



behaviour  
 Agonistic  
 Social  
 Ingestion  
 Rest  
 Travel



behaviour  
 Agonistic  
 Social  
 Ingestion  
 Rest  
 Travel



behaviour  
 Agonistic  
 Social  
 Ingestion  
 Rest  
 Travel

## Appendix G Behavioural statistics and model

Table1 Crosstabulation of behavior by month, showing observed and expected counts. Data from all rivers, OMG, AMG, NBG, all age sex categories, FDF and Census combined.

months \* Behaviour Crosstabulation

			Behaviour					Total
			Agonistic	Rest	Travel	Social	Ingestion	
months	June 2003	Count	15	31	26	21	9	102
		Expected Count	9.3	48.2	26.4	7.0	11.1	102.0
	July 2003	Count	32	61	67	24	26	210
		Expected Count	19.2	99.3	54.3	14.4	22.9	210.0
	August 2003	Count	28	67	85	45	26	251
		Expected Count	22.9	118.7	64.9	17.2	27.4	251.0
	September 2003	Count	79	253	180	83	131	726
		Expected Count	66.3	343.2	187.7	49.6	79.2	726.0
	October 2003	Count	187	261	258	66	222	994
		Expected Count	90.8	469.9	257.0	67.9	108.4	994.0
	November 2003	Count	83	419	220	197	238	1157
		Expected Count	105.7	546.9	299.1	79.1	126.2	1157.0
	December 2003	Count	22	80	51	21	21	195
		Expected Count	17.8	92.2	50.4	13.3	21.3	195.0
	January 2004	Count	192	1090	1429	236	482	3429
		Expected Count	313.3	1621.0	886.4	234.4	373.9	3429.0
	February 2004	Count	115	720	495	69	77	1476
		Expected Count	134.9	697.7	381.6	100.9	161.0	1476.0
	March 2004	Count	214	2261	1184	151	333	4143
		Expected Count	378.5	1958.5	1071.0	283.2	451.8	4143.0
	April 2004	Count	321	2978	969	251	574	5093
		Expected Count	465.3	2407.6	1316.6	348.1	555.4	5093.0
	May 2004	Count	426	2409	907	265	536	4543
		Expected Count	415.1	2147.6	1174.4	310.5	495.4	4543.0
	June 2004	Count	526	2381	1079	337	375	4698
		Expected Count	429.3	2220.8	1214.5	321.1	512.3	4698.0
	July 2004	Count	483	1077	754	271	200	2785
		Expected Count	254.5	1316.5	719.9	190.4	303.7	2785.0
Total		Count	2723	14088	7704	2037	3250	29802
		Expected Count	2723.0	14088.0	7704.0	2037.0	3250.0	29802.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2587.913 <sup>a</sup>	52	.000
Likelihood Ratio	2444.856	52	.000
N of Valid Cases	29802		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.97.

Table 2 Crosstabulation of behaviour by time of day, showing observed and expected counts. Data from all rivers, OMG, AMG, NBG, all age sex categories, FDF and Census combined.

**Three times of day \* Behaviour Crosstabulation**

			Behaviour					Total
			Agonistic	Rest	Travel	Social	Ingestion	
Three times of day	5-8	Count	925	4049	3308	761	1166	10209
		Expected Count	932.5	4826.0	2639.3	697.8	1113.4	10209.0
	9-14	Count	692	5695	1549	374	576	8886
		Expected Count	811.7	4200.6	2297.2	607.4	969.1	8886.0
	15-18	Count	1105	4343	2847	902	1508	10705
		Expected Count	977.8	5060.4	2767.5	731.7	1167.5	10705.0
Total	Count	2722	14087	7704	2037	3250	29800	
	Expected Count	2722.0	14087.0	7704.0	2037.0	3250.0	29800.0	

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1604.440 <sup>a</sup>	8	.000
Likelihood Ratio	1612.894	8	.000
N of Valid Cases	29800		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 607.41.

Table 3 Crosstabulation of behaviour by time of day, showing observed and expected counts. Data from all rivers, AMG, all age sex categories FDF and census combined.

**behaviours combined \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
behaviours combined	agonistic	Count	1	6	13	20
		Expected Count	4.6	6.3	9.2	20.0
	ingestion	Count	30	113	84	227
		Expected Count	52.0	71.1	103.9	227.0
	groom	Count	3	0	7	10
		Expected Count	2.3	3.1	4.6	10.0
	play	Count	0	2	2	4
		Expected Count	.9	1.3	1.8	4.0
	resting	Count	90	36	76	202
		Expected Count	46.2	63.3	92.5	202.0
	travel	Count	87	123	163	373
		Expected Count	85.4	116.8	170.8	373.0
	vigilant	Count	2	15	85	102
		Expected Count	23.3	32.0	46.7	102.0
	vocalise	Count	15	17	26	58
		Expected Count	13.3	18.2	26.6	58.0
Total		Count	228	312	456	996
		Expected Count	228.0	312.0	456.0	996.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	165.269 <sup>a</sup>	14	.000
Likelihood Ratio	171.037	14	.000
Linear-by-Linear Association	5.669	1	.017
N of Valid Cases	996		

a. 7 cells (29.2%) have expected count less than 5. The minimum expected count is .92.

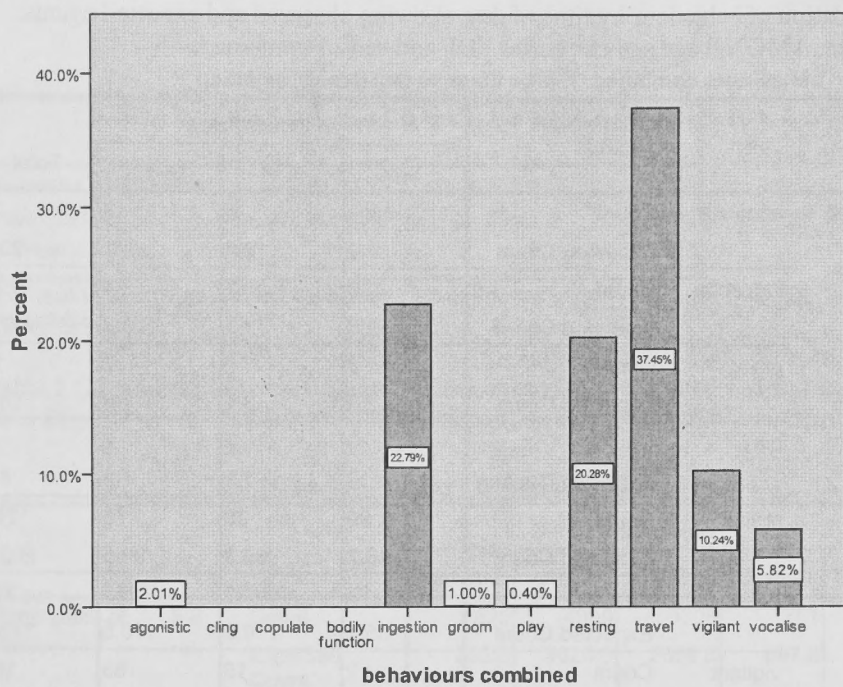


Figure 1 AMG activity budget.

Table 4 Crosstabulation of behavior by month, showing observed and expected counts. Data from all rivers, OMG, all age sex categories, FDF and Census combined.

months \* behaviours combined Crosstabulation

			behaviours combined										Total	
			agonistic	cling	copulate	bodily function	ingestion	groom	play	resting	travel	vigilant		vocalise
months	June 2003	Count	3	11	0	0	9	4	6	31	26	7	5	102
		Expected Count	.5	2.0	.0	.9	10.6	2.7	2.5	48.8	25.6	5.2	3.2	102.0
	July 2003	Count	0	14	0	0	26	8	2	61	67	26	6	210
		Expected Count	1.1	4.1	.1	1.8	21.8	5.5	5.1	100.6	52.7	10.8	6.6	210.0
	August 2003	Count	0	26	2	0	26	3	14	67	85	26	2	251
		Expected Count	1.3	4.9	.1	2.1	26.0	6.5	6.1	120.2	63.0	12.9	7.9	251.0
	September 2003	Count	4	24	0	4	131	17	42	253	180	49	26	730
		Expected Count	3.8	14.2	.2	6.1	75.7	19.0	17.7	349.6	183.1	37.5	23.0	730.0
	October 2003	Count	7	22	0	0	35	23	10	143	71	18	6	335
		Expected Count	1.7	6.5	.1	2.8	34.8	8.7	8.1	160.4	84.0	17.2	10.5	335.0
	November 2003	Count	12	71	1	1	236	61	63	372	186	31	36	1070
		Expected Count	5.5	20.8	.3	9.0	111.0	27.9	26.0	512.4	268.4	55.0	33.7	1070.0
	December 2003	Count	3	8	0	0	21	9	4	80	51	18	1	195
		Expected Count	1.0	3.8	.1	1.6	20.2	5.1	4.7	93.4	48.9	10.0	6.1	195.0
	January 2004	Count	28	49	4	0	422	83	95	1017	1223	51	85	3057

	Expected Count	15.8	59.4	1.0	25.7	317.1	79.7	74.2	1464.0	766.7	157.1	96.2	3057.0
February 2004	Count	7	6	0	2	77	39	24	718	487	38	68	1466
	Expected Count	7.6	28.5	.5	12.3	152.1	38.2	35.6	702.1	367.7	75.3	46.1	1466.0
March 2004	Count	14	33	0	40	330	61	57	2246	1154	86	112	4133
	Expected Count	21.4	80.3	1.3	34.7	428.7	107.8	100.3	1979.3	1036.6	212.4	130.1	4133.0
April 2004	Count	14	48	0	44	541	94	92	2831	915	174	124	4877
	Expected Count	25.3	94.8	1.5	41.0	505.9	127.2	118.3	2335.6	1223.2	250.7	153.5	4877.0
May 2004	Count	22	64	2	30	536	118	81	2409	907	255	149	4573
	Expected Count	23.7	88.9	1.4	38.4	474.4	119.3	111.0	2190.0	1147.0	235.0	143.9	4573.0
June 2004	Count	16	70	0	63	373	136	130	2374	1058	362	141	4723
	Expected Count	24.5	91.8	1.5	39.7	489.9	123.2	114.6	2261.9	1184.6	242.7	148.7	4723.0
July 2004	Count	18	109	0	56	200	89	73	1077	754	327	138	2841
	Expected Count	14.7	55.2	.9	23.9	294.7	74.1	68.9	1360.6	712.6	146.0	89.4	2841.0
Total	Count	148	555	9	240	2963	745	693	13679	7164	1468	899	28563
	Expected Count	148.0	555.0	9.0	240.0	2963.0	745.0	693.0	13679.0	7164.0	1468.0	899.0	28563.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2869.058 <sup>a</sup>	130	.000
Likelihood Ratio	2627.816	130	.000
Linear-by-Linear Association	122.991	1	.000
N of Valid Cases	28563		

a. 33 cells (21.4%) have expected count less than 5. The minimum expected count is .03.

Table 5 Crosstabulation of behavior by month, showing observed and expected counts. Data from all rivers, OMG, all age sex categories, FDF and Census combined.

months \* Behaviour Crosstabulation

			Behaviour					Total
			Agonistic	Rest	Travel	Social	Ingestion	
months	June 2003	Count	15	31	26	21	9	102
		Expected Count	9.4	49.5	24.8	7.5	10.9	102.0
	July 2003	Count	32	61	64	24	26	207
		Expected Count	19.0	100.5	50.3	15.2	22.0	207.0
	August 2003	Count	28	67	82	45	26	248
		Expected Count	22.8	120.4	60.2	18.2	26.4	248.0
	September 2003	Count	79	251	175	83	129	717
		Expected Count	65.9	348.0	174.2	52.6	76.4	717.0
	October 2003	Count	31	140	68	55	33	327
		Expected Count	30.0	158.7	79.4	24.0	34.8	327.0
	November 2003	Count	71	363	172	194	229	1029
		Expected Count	94.5	499.5	249.9	75.5	109.6	1029.0
	December 2003	Count	20	76	49	21	20	186
		Expected Count	17.1	90.3	45.2	13.6	19.8	186.0
	January 2004	Count	163	1007	1212	231	419	3032
		Expected Count	278.5	1471.8	736.4	222.4	323.0	3032.0
	February 2004	Count	113	718	475	69	77	1452
		Expected Count	133.4	704.8	352.7	106.5	154.7	1452.0
	March 2004	Count	205	2244	1152	151	330	4082
		Expected Count	374.9	1981.4	991.5	299.4	434.8	4082.0
	April 2004	Count	312	2794	881	232	522	4741
		Expected Count	435.4	2301.3	1151.5	347.7	505.0	4741.0
	May 2004	Count	410	2275	780	259	517	4241



	Expected Count	389.5	2058.6	1030.1	311.0	451.7	4241.0
June 2004	Count	511	2125	840	331	356	4163
	Expected Count	382.4	2020.7	1011.1	305.3	443.4	4163.0
July 2004	Count	477	886	548	254	168	2333
	Expected Count	214.3	1132.5	566.7	171.1	248.5	2333.0
Total	Count	2467	13038	6524	1970	2861	26860
	Expected Count	2467.0	13038.0	6524.0	1970.0	2861.0	26860.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2410.322 <sup>a</sup>	52	.000
Likelihood Ratio	2238.718	52	.000
N of Valid Cases	26860		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.48.

Table 6 Crosstabulation of behavior by month, showing observed and expected counts. Data from all rivers, OMG, adult age sex categories only, FDF and Census combined.

#### months \* Behaviour Crosstabulation

			Behaviour					Total
			Agonistic	Rest	Travel	Social	Ingestion	
months	June 2003	Count	12	25	16	1	8	62
		Expected Count	5.8	31.8	15.4	1.9	7.1	62.0
	July 2003	Count	26	44	40	8	15	133
		Expected Count	12.5	68.2	33.0	4.1	15.2	133.0
	August 2003	Count	21	59	56	6	23	165
		Expected Count	15.5	84.6	40.9	5.1	18.9	165.0
	September 2003	Count	71	196	116	11	91	485
		Expected Count	45.7	248.6	120.3	14.9	55.5	485.0
	October 2003	Count	25	113	52	14	29	233
		Expected Count	22.0	119.5	57.8	7.2	26.7	233.0
	November 2003	Count	64	303	129	46	173	715
		Expected Count	67.4	366.6	177.3	22.0	81.8	715.0
	December 2003	Count	19	57	31	7	18	132
		Expected Count	12.4	67.7	32.7	4.1	15.1	132.0
	January 2004	Count	120	791	896	68	333	2208
		Expected Count	208.1	1132.0	547.4	67.9	252.6	2208.0
	February 2004	Count	66	496	346	28	62	998

	Expected Count	94.0	511.7	247.4	30.7	114.2	998.0
March 2004	Count	151	1883	936	52	261	3283
	Expected Count	309.4	1683.1	814.0	100.9	375.6	3283.0
April 2004	Count	227	2058	660	76	402	3423
	Expected Count	322.6	1754.9	848.7	105.2	391.7	3423.0
May 2004	Count	321	1811	586	109	421	3248
	Expected Count	306.1	1665.2	805.3	99.8	371.6	3248.0
June 2004	Count	383	1586	587	116	270	2942
	Expected Count	277.2	1508.3	729.4	90.4	336.6	2942.0
July 2004	Count	334	588	390	58	128	1498
	Expected Count	141.2	768.0	371.4	46.0	171.4	1498.0
Total	Count	1840	10010	4841	600	2234	19525
	Expected Count	1840.0	10010.0	4841.0	600.0	2234.0	19525.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1536.674 <sup>a</sup>	52	.000
Likelihood Ratio	1444.023	52	.000
N of Valid Cases	19525		

a. 3 cells (4.3%) have expected count less than 5. The minimum expected count is 1.91.

Table 7 Crosstabulation of behavior by time of day, showing observed and expected counts. Data from all rivers, OMG, all age sex categories, FDF and Census combined.

#### Three times of day \* Behaviour Crosstabulation

			Behaviour					Total
			Agonistic	Rest	Travel	Social	Ingestion	
Three times of day	5-8	Count	892	3876	3120	745	1103	9736
		Expected Count	864.5	4702.1	2462.6	688.2	1018.5	9736.0
	9-14	Count	644	5584	1402	369	461	8460
		Expected Count	751.2	4085.9	2139.9	598.0	885.0	8460.0
	15-18	Count	979	4219	2642	888	1399	10127
		Expected Count	899.2	4891.0	2561.5	715.8	1059.4	10127.0
Total	Count	2515	13679	7164	2002	2963	28323	
	Expected Count	2515.0	13679.0	7164.0	2002.0	2963.0	28323.0	

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1695.268 <sup>a</sup>	8	.000
Likelihood Ratio	1718.740	8	.000
N of Valid Cases	28323		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 597.99.

Table 8 Crosstabulation of behavior by time of day, showing observed and expected counts. Data from all rivers, OMG, adult age sex categories only, FDF and Census combined.

**Three times of day \* Behaviour Crosstabulation**

			Behaviour					Total
			Agonistic	Rest	Travel	Social	Ingestion	
Three times of day	5-8	Count	647	2885	2192	229	815	6768
		Expected Count	637.8	3469.8	1678.0	208.0	774.4	6768.0
	9-14	Count	446	3996	882	133	331	5788
		Expected Count	545.5	2967.4	1435.1	177.9	662.2	5788.0
	15-18	Count	747	3129	1767	238	1088	6969
		Expected Count	656.7	3572.8	1727.9	214.2	797.4	6969.0
Total	Count	1840	10010	4841	600	2234	19525	
	Expected Count	1840.0	10010.0	4841.0	600.0	2234.0	19525.0	

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1202.224 <sup>a</sup>	8	.000
Likelihood Ratio	1224.108	8	.000
N of Valid Cases	19525		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 177.86.

Table 9 Crosstabulation of behaviour by month, showing observed and expected counts. Data from all rivers, OMG, all age sex categories for FDF.

months \* Behaviour Crosstabulation

		Behaviour					Total	
		Agonistic	Rest	Travel	Social	Ingestion		
months	September 2003	Count	45	134	105	39	73	396
		Expected Count	33.3	200.2	98.8	23.4	40.3	396.0
	October 2003	Count	7	20	19	1	4	51
		Expected Count	4.3	25.8	12.7	3.0	5.2	51.0
	November 2003	Count	44	285	145	142	203	819
		Expected Count	68.9	414.1	204.3	48.3	83.4	819.0
	January 2004	Count	151	858	1117	204	387	2717
		Expected Count	228.6	1373.7	677.8	160.3	276.6	2717.0
	February 2004	Count	110	674	439	67	75	1365
		Expected Count	114.9	690.1	340.5	80.5	139.0	1365.0
	March 2004	Count	187	2180	1081	122	296	3866
		Expected Count	325.3	1954.6	964.4	228.0	393.6	3866.0
	April 2004	Count	285	2771	826	195	493	4570
		Expected Count	384.5	2310.6	1140.0	269.6	465.3	4570.0
	May 2004	Count	352	2241	806	191	468	4058
		Expected Count	341.5	2051.7	1012.3	239.4	413.2	4058.0
	June 2004	Count	446	2270	956	268	335	4275
		Expected Count	359.7	2161.4	1066.4	252.2	435.2	4275.0
	July 2004	Count	440	987	634	220	167	2448
		Expected Count	206.0	1237.7	610.7	144.4	249.2	2448.0
Total		Count	2067	12420	6128	1449	2501	24565
		Expected Count	2067.0	12420.0	6128.0	1449.0	2501.0	24565.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2033.655 <sup>a</sup>	36	.000
Likelihood Ratio	1879.561	36	.000
N of Valid Cases	24565		

a. 2 cells (4.0%) have expected count less than 5. The minimum expected count is 3.01.

Table 10 Crosstabulation of behaviour by month, showing observed and expected counts. Data from all rivers, OMG, all adult age sex categories for FDF.

months \* Behaviour Crosstabulation

		Behaviour					Total	
		Agonistic	Rest	Travel	Social	Ingestion		
months	September 2003	Count	41	99	69	4	54	267
		Expected Count	23.4	142.0	64.7	7.6	29.3	267.0
	October 2003	Count	4	13	11	0	2	30
		Expected Count	2.6	16.0	7.3	.9	3.3	30.0
	November 2003	Count	36	231	100	25	145	537
		Expected Count	47.0	285.6	130.1	15.3	59.0	537.0
	January 2004	Count	109	666	829	68	305	1977
		Expected Count	172.9	1051.4	478.9	56.4	217.3	1977.0
	February 2004	Count	64	462	306	28	60	920
		Expected Count	80.5	489.3	222.9	26.2	101.1	920.0
	March 2004	Count	135	1827	883	50	232	3127
		Expected Count	273.5	1663.1	757.5	89.2	343.7	3127.0
	April 2004	Count	204	2003	593	72	361	3233
		Expected Count	282.8	1719.4	783.1	92.2	355.4	3233.0
	May 2004	Count	259	1681	497	88	364	2889
		Expected Count	252.7	1536.5	699.8	82.4	317.6	2889.0
	June 2004	Count	327	1505	510	99	236	2677
		Expected Count	234.2	1423.7	648.5	76.4	294.3	2677.0
	July 2004	Count	302	517	303	49	102	1273
		Expected Count	111.4	677.0	308.4	36.3	139.9	1273.0
Total		Count	1481	9004	4101	483	1861	16930
		Expected Count	1481.0	9004.0	4101.0	483.0	1861.0	16930.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1544.348 <sup>a</sup>	36	.000
Likelihood Ratio	1409.426	36	.000
N of Valid Cases	16930		

a. 3 cells (6.0%) have expected count less than 5. The minimum expected count is .86.

Table 11 Crosstabulation of behavior by time of day, showing observed and expected counts. Data from all rivers, OMG, all age sex categories, for FDF.

**Three times of day \* Behaviour Crosstabulation**

			Behaviour					Total
			Agonistic	Rest	Travel	Social	Ingestion	
Three times of day	5-8	Count	705	3377	2533	524	907	8046
		Expected Count	677.0	4068.0	2007.2	474.6	819.2	8046.0
	9-14	Count	644	5584	1402	369	461	8460
		Expected Count	711.9	4277.4	2110.4	499.0	861.3	8460.0
	15-18	Count	718	3459	2193	556	1133	8059
		Expected Count	678.1	4074.6	2010.4	475.4	820.5	8059.0
Total	Count	2067	12420	6128	1449	2501	24565	
	Expected Count	2067.0	12420.0	6128.0	1449.0	2501.0	24565.0	

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1378.870 <sup>a</sup>	8	.000
Likelihood Ratio	1404.794	8	.000
N of Valid Cases	24565		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 474.60.

Table 12 Crosstabulation of behaviour by time of day, showing all observed and expected counts. Data from all rivers, OMG, adult age sex categories only for FDF.

**Three times of day \* Behaviour Crosstabulation**

			Behaviour					Total
			Agonistic	Rest	Travel	Social	Ingestion	
Three times of day	5-8	Count	500	2480	1761	176	661	5578
		Expected Count	488.0	2966.6	1351.2	159.1	613.2	5578.0
	9-14	Count	446	3996	882	133	331	5788
		Expected Count	506.3	3078.3	1402.0	165.1	636.2	5788.0
	15-18	Count	535	2528	1458	174	869	5564
		Expected Count	486.7	2959.1	1347.8	158.7	611.6	5564.0
Total	Count	1481	9004	4101	483	1861	16930	
	Expected Count	1481.0	9004.0	4101.0	483.0	1861.0	16930.0	

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1022.707 <sup>a</sup>	8	.000
Likelihood Ratio	1044.645	8	.000
N of Valid Cases	16930		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 158.74.

Table 13 Crosstabulation of behaviour by month, showing observed and expected counts. Data from all rivers, OMG, all age sex categories for Census.

**months \* Behaviour Crosstabulation**

			Behaviour					Total
			Agonistic	Rest	Travel	Social	Ingestion	
months	June 2003	Count	15	31	26	21	9	102
		Expected Count	12.2	34.2	28.1	15.0	12.5	102.0
	July 2003	Count	32	61	67	24	26	210
		Expected Count	25.0	70.4	57.9	30.9	25.8	210.0
	August 2003	Count	28	67	85	45	26	251
		Expected Count	29.9	84.1	69.2	36.9	30.9	251.0
	September 2003	Count	34	119	75	44	58	330
		Expected Count	39.3	110.6	91.0	48.6	40.6	330.0
	October 2003	Count	24	123	52	54	31	284
		Expected Count	33.9	95.1	78.3	41.8	34.9	284.0
	November 2003	Count	35	87	41	54	33	250
		Expected Count	29.8	83.8	68.9	36.8	30.7	250.0
	December 2003	Count	22	80	51	21	21	195
		Expected Count	23.2	65.3	53.8	28.7	24.0	195.0
	January 2004	Count	13	159	106	27	35	340
		Expected Count	40.5	113.9	93.7	50.0	41.8	340.0
	February 2004	Count	3	44	48	2	2	99
		Expected Count	11.8	33.2	27.3	14.6	12.2	99.0
	March 2004	Count	25	66	73	29	34	227
		Expected Count	27.1	76.0	62.6	33.4	27.9	227.0
	April 2004	Count	27	60	89	39	48	263
		Expected Count	31.4	88.1	72.5	38.7	32.3	263.0
	May 2004	Count	74	168	101	74	68	485
		Expected Count	57.8	162.5	133.7	71.4	59.6	485.0
	June 2004	Count	73	104	102	68	38	385

	Expected Count	45.9	129.0	106.1	56.7	47.3	385.0
July 2004	Count	43	90	120	51	33	337
	Expected Count	40.2	112.9	92.9	49.6	41.4	337.0
Total	Count	448	1259	1036	553	462	3758
	Expected Count	448.0	1259.0	1036.0	553.0	462.0	3758.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	257.530 <sup>a</sup>	52	.000
Likelihood Ratio	273.342	52	.000
N of Valid Cases	3758		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 11.80.

Table 14 Crosstabulation of behaviour by month, showing observed and expected counts. Data from all rivers, OMG, adult age sex categories only for Census.

#### months \* Behaviour Crosstabulation

			Behaviour					Total
			Agonistic	Rest	Travel	Social	Ingestion	
months	June 2003	Count	12	25	16	1	8	62
		Expected Count	8.6	24.0	17.7	2.8	8.9	62.0
	July 2003	Count	26	44	40	8	15	133
		Expected Count	18.4	51.6	37.9	6.0	19.1	133.0
	August 2003	Count	21	59	56	6	23	165
		Expected Count	22.8	64.0	47.1	7.4	23.7	165.0
	September 2003	Count	30	97	47	7	37	218
		Expected Count	30.2	84.5	62.2	9.8	31.3	218.0
	October 2003	Count	21	100	41	14	27	203
		Expected Count	28.1	78.7	57.9	9.2	29.2	203.0
	November 2003	Count	28	72	29	21	28	178
		Expected Count	24.6	69.0	50.8	8.0	25.6	178.0
	December 2003	Count	19	57	31	7	18	132
		Expected Count	18.3	51.2	37.6	6.0	19.0	132.0
	January 2004	Count	11	125	67	0	28	231
		Expected Count	32.0	89.6	65.9	10.4	33.2	231.0
	February 2004	Count	2	34	40	0	2	78
		Expected Count	10.8	30.2	22.2	3.5	11.2	78.0
	March 2004	Count	16	56	53	2	29	156



	Expected Count	21.6	60.5	44.5	7.0	22.4	156.0
April 2004	Count	23	55	67	4	41	190
	Expected Count	26.3	73.7	54.2	8.6	27.3	190.0
May 2004	Count	62	130	89	21	57	359
	Expected Count	49.7	139.2	102.4	16.2	51.6	359.0
June 2004	Count	56	81	77	17	34	265
	Expected Count	36.7	102.7	75.6	11.9	38.1	265.0
July 2004	Count	32	71	87	9	26	225
	Expected Count	31.1	87.2	64.2	10.1	32.3	225.0
Total	Count	359	1006	740	117	373	2595
	Expected Count	359.0	1006.0	740.0	117.0	373.0	2595.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	202.755 <sup>a</sup>	52	.000
Likelihood Ratio	219.242	52	.000
N of Valid Cases	2595		

a. 2 cells (2.9%) have expected count less than 5. The minimum expected count is 2.80.

Table 15 Crosstabulation of behaviour by time of day, showing observed and expected counts. Data from all rivers, OMG, all age sex categories for Census.

#### Three times of day \* Behaviour Crosstabulation

			Behaviour					Total
			Agonistic	Rest	Travel	Social	Ingestion	
Three times of day	5-8	Count	187	499	587	221	196	1690
		Expected Count	201.5	566.2	465.9	248.7	207.8	1690.0
	15-18	Count	261	760	449	332	266	2068
		Expected Count	246.5	692.8	570.1	304.3	254.2	2068.0
Total	Count	448	1259	1036	553	462	3758	
	Expected Count	448.0	1259.0	1036.0	553.0	462.0	3758.0	

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	80.391 <sup>a</sup>	4	.000
Likelihood Ratio	80.212	4	.000
N of Valid Cases	3758		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 201.47.

Table 16 Crosstabulation of behaviour by time of day, showing observed and expected counts. Data from all rivers, OMG, adult age sex categories only for Census.

**Three times of day \* Behaviour Crosstabulation**

			Behaviour					Total
			Agonistic	Rest	Travel	Social	Ingestion	
Three times of day	5-8	Count	147	405	431	53	154	1190
		Expected Count	164.6	461.3	339.3	53.7	171.0	1190.0
	15-18	Count	212	601	309	64	219	1405
		Expected Count	194.4	544.7	400.7	63.3	202.0	1405.0
Total	Count	359	1006	740	117	373	2595	
	Expected Count	359.0	1006.0	740.0	117.0	373.0	2595.0	

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	65.064 <sup>a</sup>	4	.000
Likelihood Ratio	65.059	4	.000
N of Valid Cases	2595		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 53.65.

Table 17 Crosstabulation of behaviour by river, showing observed and expected counts. Data from OMG, all age sex categories for FDF and Census.

**behaviour \* River Crosstabulation**

			River			Total
			Menanggal	Resang	Tenangang Besar	
behaviour	Agonistic	Count	1133	728	531	2392
		Expected Count	1121.5	569.4	701.1	2392.0
	Social	Count	1063	406	637	2106
		Expected Count	987.4	501.3	617.3	2106.0
	Ingestion	Count	1403	536	926	2865
		Expected Count	1343.2	682.0	839.7	2865.0
	Rest	Count	6313	2876	4242	13431
		Expected Count	6297.0	3197.4	3936.7	13431.0
	Travel	Count	3102	2062	1800	6964
		Expected Count	3265.0	1657.8	2041.2	6964.0
	Total	Count	13014	6608	8136	27758
		Expected Count	13014.0	6608.0	8136.0	27758.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	344.075 <sup>a</sup>	8	.000
Likelihood Ratio	342.311	8	.000
Linear-by-Linear Association	14.419	1	.000
N of Valid Cases	27758		

Table 18 Crosstabulation of behaviour by river, showing observed and expected counts. Data from OMG, adult age sex categories only for FDF and Census.

**behaviour \* River Crosstabulation**

			River			Total
			Menanggul	Resang	Tenagang Besar	
behaviour	Agonistic	Count	830	549	410	1789
		Expected Count	836.1	424.9	528.0	1789.0
	Social	Count	412	178	221	811
		Expected Count	379.0	192.6	239.3	811.0
	Ingestion	Count	1129	413	712	2254
		Expected Count	1053.4	535.4	665.2	2254.0
	Rest	Count	4899	2176	3368	10443
		Expected Count	4880.6	2480.6	3081.8	10443.0
	Travel	Count	2365	1581	1373	5319
		Expected Count	2485.9	1263.4	1569.7	5319.0
Total		Count	9635	4897	6084	20616
		Expected Count	9635.0	4897.0	6084.0	20616.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	279.072 <sup>a</sup>	8	.000
Likelihood Ratio	276.494	8	.000
Linear-by-Linear Association	11.096	1	.001
N of Valid Cases	20616		

Table 19 Crosstabulation of behaviour by river, showing observed and expected counts. Data from OMG, all age sex categories for FDF and Census

**behaviours combined \* River Crosstabulation**

			River					Total
			Menanggul	Sukau	Resang	Tenagang Besar	Oxbow lakes	
behaviours combined	agonistic	Count	64	1	42	34	7	148
		Expected Count	67.4	2.2	34.2	42.2	1.9	148.0
	cling	Count	241	31	92	159	32	555
		Expected Count	252.9	8.4	128.4	158.1	7.3	555.0
	copulate	Count	6	0	1	2	0	9
		Expected Count	4.1	.1	2.1	2.6	.1	9.0
	bodily function	Count	123	3	57	57	0	240
		Expected Count	109.3	3.6	55.5	68.4	3.2	240.0
	ingestion	Count	1403	50	536	926	48	2963
		Expected Count	1350.0	44.6	685.5	844.0	38.9	2963.0
	groom	Count	359	26	153	199	8	745

	Expected Count	339.4	11.2	172.4	212.2	9.8	745.0
play	Count	334	15	103	220	21	693
	Expected Count	315.7	10.4	160.3	197.4	9.1	693.0
resting	Count	6313	137	2876	4242	111	13679
	Expected Count	6232.5	205.9	3164.6	3896.4	179.6	13679.0
travel	Count	3102	97	2062	1800	103	7164
	Expected Count	3264.1	107.9	1657.4	2040.6	94.1	7164.0
vigilant	Count	584	54	517	276	37	1468
	Expected Count	668.9	22.1	339.6	418.2	19.3	1468.0
vocalise	Count	485	16	169	221	8	899
	Expected Count	409.6	13.5	208.0	256.1	11.8	899.0
Total	Count	13014	430	6608	8136	375	28563
	Expected Count	13014.0	430.0	6608.0	8136.0	375.0	28563.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	779.383 <sup>a</sup>	40	.000
Likelihood Ratio	689.230	40	.000
Linear-by-Linear Association	3.064	1	.080
N of Valid Cases	28563		

a. 9 cells (16.4%) have expected count less than 5. The minimum expected count is .12.

Table 20 Crosstabulation of behaviour by month, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories for FDF.

behaviours combined \* months Crosstabulation

			months									Total	
			September 2003	October 2003	November 2003	January 2004	February 2004	March 2004	April 2004	May 2004	June 2004		July 2004
behaviours combined	agonistic	Count	0	0	1	24	7	5	5	2	2	5	51
		Expected Count	1.6	.1	1.1	9.6	4.9	7.2	6.9	6.9	6.6	6.1	51.0
	cling	Count	7	0	11	27	5	0	22	6	21	60	159
		Expected Count	5.0	.4	3.3	30.0	15.2	22.3	21.6	21.6	20.7	18.9	159.0
	copulate	Count	0	0	0	4	0	0	0	2	0	0	6
		Expected Count	.2	.0	.1	1.1	.6	.8	.8	.8	.8	.7	6.0
	bodily function	Count	3	0	0	0	2	15	21	18	23	37	119
		Expected Count	3.7	.3	2.5	22.4	11.4	16.7	16.2	16.2	15.5	14.1	119.0
	ingestion	Count	62	0	35	331	55	160	208	149	146	81	1227
		Expected Count	38.5	3.0	25.6	231.3	117.3	172.4	166.8	167.0	159.5	145.6	1227.0
	groom	Count	5	0	28	67	25	28	33	27	29	41	283
		Expected Count	8.9	.7	5.9	53.3	27.0	39.8	38.5	38.5	36.8	33.6	283.0
	play	Count	22	0	8	84	13	20	31	30	54	29	291
		Expected Count	9.1	.7	6.1	54.8	27.8	40.9	39.6	39.6	37.8	34.5	291.0
	resting	Count	124	9	122	786	609	937	867	916	869	578	5817
		Expected Count	182.5	14.4	121.5	1096.4	555.9	817.2	790.9	791.9	756.2	690.2	5817.0

travel	Count	100	15	26	789	326	415	288	301	258	320	2838
	Expected Count	89.0	7.0	59.3	534.9	271.2	398.7	385.9	386.4	368.9	336.8	2838.0
vigilant	Count	32	5	12	36	34	33	48	82	86	134	502
	Expected Count	15.7	1.2	10.5	94.6	48.0	70.5	68.3	68.3	65.3	59.6	502.0
vocalise	Count	13	0	2	63	45	35	72	64	37	107	438
	Expected Count	13.7	1.1	9.1	82.6	41.9	61.5	59.6	59.6	56.9	52.0	438.0
Total	Count	368	29	245	2211	1121	1648	1595	1597	1525	1392	11731
	Expected Count	368.0	29.0	245.0	2211.0	1121.0	1648.0	1595.0	1597.0	1525.0	1392.0	11731.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1296.014 <sup>a</sup>	90	.000
Likelihood Ratio	1250.849	90	.000
Linear-by-Linear Association	24.106	1	.000
N of Valid Cases	11731		

a. 25 cells (22.7%) have expected count less than 5. The minimum expected count is .01.

Table 21 Crosstabulation of behaviour by month, showing observed and expected counts. Data from Menanggul, OMG, adult age sex categories only for FDF.

**months \* Behaviour Crosstabulation**

		Behaviour					Total	
		Agonistic	Rest	Travel	Social	Ingestion		
months	September 2003	Count	41	93	65	4	47	250
		Expected Count	21.5	132.6	59.4	7.3	29.1	250.0
	October 2003	Count	2	6	7	0	0	15
		Expected Count	1.3	8.0	3.6	.4	1.7	15.0
	November 2003	Count	14	84	12	19	23	152
		Expected Count	13.1	80.6	36.1	4.4	17.7	152.0
	January 2004	Count	88	606	580	57	258	1589
		Expected Count	136.7	842.7	377.9	46.4	185.3	1589.0
	February 2004	Count	50	415	238	19	44	766
		Expected Count	65.9	406.3	182.2	22.4	89.3	766.0
	March 2004	Count	56	826	356	27	139	1404
		Expected Count	120.8	744.6	333.9	41.0	163.7	1404.0
	April 2004	Count	90	683	218	30	161	1182
		Expected Count	101.7	626.9	281.1	34.5	137.8	1182.0
	May 2004	Count	114	757	183	32	128	1214
		Expected Count	104.5	643.9	288.7	35.5	141.5	1214.0
	June 2004	Count	82	549	143	26	105	905
		Expected Count	77.9	480.0	215.2	26.4	105.5	905.0
	July 2004	Count	170	339	152	26	53	740
		Expected Count	63.7	392.5	176.0	21.6	86.3	740.0
Total		Count	707	4358	1954	240	958	8217
		Expected Count	707.0	4358.0	1954.0	240.0	958.0	8217.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	758.026 <sup>a</sup>	36	.000
Likelihood Ratio	698.984	36	.000
N of Valid Cases	8217		

a. 5 cells (10.0%) have expected count less than 5. The minimum expected count is .44.

Table 22 Crosstabulation of behaviour by month, showing observed and expected counts. Data from Resang, OMG, all age sex categories for FDF.

**behaviours combined \* months Crosstabulation**

		months								Total
		October 2003	January 2004	February 2004	March 2004	April 2004	May 2004	June 2004	July 2004	
behaviours combined	agonistic Count	0	4	0	1	3	17	0	9	34
	Expected Count	.1	2.3	.6	2.5	6.6	9.5	6.1	6.3	34.0
cling	Count	1	4	0	3	5	8	12	26	59
	Expected Count	.2	4.0	1.0	4.3	11.5	16.5	10.5	10.9	59.0
bodily function	Count	0	0	0	1	15	7	15	19	57
	Expected Count	.2	3.9	1.0	4.2	11.1	15.9	10.2	10.6	57.0
ingestion	Count	4	38	2	2	56	234	56	86	478
	Expected Count	1.8	32.4	8.1	34.9	93.1	133.6	85.4	88.6	478.0
groom	Count	0	14	0	4	19	42	28	33	140
	Expected Count	.5	9.5	2.4	10.2	27.3	39.1	25.0	26.0	140.0
play	Count	0	2	0	0	21	17	12	31	83
	Expected Count	.3	5.6	1.4	6.1	16.2	23.2	14.8	15.4	83.0
resting	Count	11	55	12	203	709	847	441	409	2687
	Expected Count	9.9	182.3	45.7	196.2	523.6	751.1	480.2	498.1	2687.0
travel	Count	4	271	76	206	239	360	360	314	1830
	Expected Count	6.7	124.2	31.1	133.6	356.6	511.6	327.0	339.2	1830.0
vigilant	Count	2	11	1	7	85	97	118	170	491
	Expected Count	1.8	33.3	8.3	35.8	95.7	137.3	87.7	91.0	491.0
vocalise	Count	0	8	11	11	17	48	30	15	140
	Expected Count	.5	9.5	2.4	10.2	27.3	39.1	25.0	26.0	140.0
Total	Count	22	407	102	438	1169	1677	1072	1112	5999
	Expected Count	22.0	407.0	102.0	438.0	1169.0	1677.0	1072.0	1112.0	5999.0



**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1016.210 <sup>a</sup>	63	.000
Likelihood Ratio	1021.672	63	.000
Linear-by-Linear Association	1.441	1	.230
N of Valid Cases	5999		

a. 20 cells (25.0%) have expected count less than 5. The minimum expected count is .12.

Table 23 Crosstabulation of behaviour by month, showing observed and expected counts. Data from Resang, OMG, adult age sex categories only for FDF.

**months \* Behaviour Crosstabulation**

			Behaviour					Total
			Agonistic	Rest	Travel	Social	Ingestion	
months	October 2003	Count	2	7	4	0	2	15
		Expected Count	1.9	6.9	4.5	.4	1.3	15.0
	January 2004	Count	17	45	201	10	30	303
		Expected Count	38.1	138.5	91.5	8.3	26.7	303.0
	February 2004	Count	8	9	47	0	2	66
		Expected Count	8.3	30.2	19.9	1.8	5.8	66.0
	March 2004	Count	15	175	167	3	1	361
		Expected Count	45.4	165.0	109.0	9.9	31.8	361.0
	April 2004	Count	82	476	171	14	36	779
		Expected Count	97.9	356.0	235.2	21.3	68.6	779.0
	May 2004	Count	119	597	222	35	175	1148
		Expected Count	144.3	524.6	346.5	31.4	101.1	1148.0
	June 2004	Count	103	251	185	19	40	598
		Expected Count	75.2	273.3	180.5	16.4	52.7	598.0
	July 2004	Count	132	178	151	23	49	533
		Expected Count	67.0	243.6	160.9	14.6	47.0	533.0
Total		Count	478	1738	1148	104	335	3803
		Expected Count	478.0	1738.0	1148.0	104.0	335.0	3803.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	644.074 <sup>a</sup>	28	.000
Likelihood Ratio	648.727	28	.000
N of Valid Cases	3803		

a. 5 cells (12.5%) have expected count less than 5. The minimum expected count is .41.

Table 24 Crosstabulation of behaviour by month, showing observed and expected counts. Data from Tenagang Besar, OMG, all age sex categories for FDF.

behaviours combined \* months Crosstabulation

		months								Total
		September 2003	November 2003	January 2004	February 2004	March 2004	April 2004	May 2004	June 2004	
behaviours agonistic combined	Count	0	4	0	0	5	6	0	8	23
	Expected Count	.1	1.9	.3	.5	5.9	6.0	2.6	5.7	23.0
cling	Count	0	42	0	1	11	3	15	11	83
	Expected Count	.4	6.7	1.2	1.7	21.3	21.7	9.5	20.4	83.0
bodily function	Count	0	0	0	0	22	8	2	25	57
	Expected Count	.3	4.6	.8	1.2	14.7	14.9	6.5	14.0	57.0
ingestion	Count	11	168	18	18	134	229	85	133	796
	Expected Count	3.5	64.6	11.1	16.2	204.7	208.3	91.3	196.1	796.0
groom	Count	0	9	2	14	27	35	24	59	170
	Expected Count	.7	13.8	2.4	3.5	43.7	44.5	19.5	41.9	170.0
play	Count	5	44	0	9	29	26	20	42	175
	Expected Count	.8	14.2	2.5	3.6	45.0	45.8	20.1	43.1	175.0
resting	Count	10	163	17	53	1040	1195	478	960	3916
	Expected Count	17.2	318.0	54.9	79.8	1007.3	1025.0	449.3	964.6	3916.0
travel	Count	5	119	57	37	460	299	145	338	1460
	Expected Count	6.4	118.6	20.4	29.7	375.5	382.1	167.5	359.6	1460.0
vigilant	Count	0	10	0	3	40	26	23	117	219
	Expected Count	1.0	17.8	3.1	4.5	56.3	57.3	25.1	53.9	219.0
vocalise	Count	0	15	5	9	50	23	19	48	169
	Expected Count	.7	13.7	2.4	3.4	43.5	44.2	19.4	41.6	169.0
Total	Count	31	574	99	144	1818	1850	811	1741	7068
	Expected Count	31.0	574.0	99.0	144.0	1818.0	1850.0	811.0	1741.0	7068.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1024.410 <sup>a</sup>	63	.000
Likelihood Ratio	843.110	63	.000
Linear-by-Linear Association	94.470	1	.000
N of Valid Cases	7068		

a. 25 cells (31.3%) have expected count less than 5. The minimum expected count is .10.

Table 25 Crosstabulation of behaviour by month, showing observed and expected counts. Data from Tenagang Besar, OMG, adult age sex categories for FDF.

months \* Behaviour Crosstabulation

		Behaviour					Total	
		Agonistic	Rest	Travel	Social	Ingestion		
months	September 2003	Count	0	6	4	0	7	17
		Expected Count	1.0	10.1	3.5	.5	2.0	17.0
	November 2003	Count	22	147	88	6	122	385
		Expected Count	23.2	228.0	78.3	10.9	44.5	385.0
	January 2004	Count	4	15	48	1	17	85
		Expected Count	5.1	50.3	17.3	2.4	9.8	85.0
	February 2004	Count	6	38	21	9	14	88
		Expected Count	5.3	52.1	17.9	2.5	10.2	88.0
	March 2004	Count	64	826	360	20	92	1362
		Expected Count	82.1	806.7	277.1	38.6	157.6	1362.0
	April 2004	Count	32	844	204	28	164	1272
		Expected Count	76.7	753.4	258.8	36.0	147.1	1272.0
	May 2004	Count	26	327	92	21	61	527
		Expected Count	31.8	312.1	107.2	14.9	61.0	527.0
	June 2004	Count	142	705	182	54	91	1174
		Expected Count	70.8	695.3	238.9	33.2	135.8	1174.0
Total		Count	296	2908	999	139	568	4910
		Expected Count	296.0	2908.0	999.0	139.0	568.0	4910.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	528.826 <sup>a</sup>	28	.000
Likelihood Ratio	468.020	28	.000
N of Valid Cases	4910		

a. 6 cells (15.0%) have expected count less than 5. The minimum expected count is .48.

Table 26 Crosstabulation of behaviour by month, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories for Census.

months \* behaviours combined Crosstabulation

		behaviours combined										Total
		agonistic	cling	bodily function	ingestion	groom	play	resting	travel	vigilant	vocalise	
months June 2003	Count	0	5	0	5	4	2	29	11	7	2	65
	Expected Count	.7	4.2	.2	8.9	3.9	2.2	25.1	13.4	4.2	2.4	65.0
July 2003	Count	0	2	0	8	6	0	28	22	8	0	74
	Expected Count	.7	4.7	.2	10.2	4.4	2.5	28.6	15.2	4.7	2.7	74.0
August 2003	Count	0	5	0	10	0	2	15	26	14	1	73
	Expected Count	.7	4.7	.2	10.0	4.3	2.4	28.2	15.0	4.7	2.7	73.0
September 2003	Count	1	9	1	18	8	6	64	25	13	8	153
	Expected Count	1.6	9.8	.5	21.0	9.1	5.1	59.1	31.5	9.8	5.6	153.0
October 2003	Count	1	8	0	15	15	6	44	6	2	0	97
	Expected Count	1.0	6.2	.3	13.3	5.7	3.3	37.5	20.0	6.2	3.6	97.0
November 2003	Count	5	5	1	17	14	5	20	9	1	4	81
	Expected Count	.8	5.2	.3	11.1	4.8	2.7	31.3	16.7	5.2	3.0	81.0
December 2003	Count	0	2	0	4	2	0	14	5	1	0	28
	Expected Count	.3	1.8	.1	3.8	1.7	.9	10.8	5.8	1.8	1.0	28.0
January 2004	Count	0	0	0	10	0	2	56	20	0	1	89
	Expected Count	.9	5.7	.3	12.2	5.3	3.0	34.4	18.3	5.7	3.3	89.0
February 2004	Count	0	0	0	2	0	2	44	16	0	3	67
	Expected Count	.7	4.3	.2	9.2	4.0	2.2	25.9	13.8	4.3	2.5	67.0
March 2004	Count	0	5	2	11	2	1	16	11	1	10	59
	Expected Count	.6	3.8	.2	8.1	3.5	2.0	22.8	12.1	3.8	2.2	59.0
April 2004	Count	0	3	0	29	4	4	7	19	4	0	70
	Expected Count	.7	4.5	.2	9.6	4.1	2.3	27.1	14.4	4.5	2.6	70.0
May 2004	Count	0	10	0	23	4	4	85	25	9	6	166
	Expected Count	1.7	10.6	.5	22.8	9.8	5.6	64.2	34.2	10.6	6.1	166.0
June 2004	Count	3	11	0	11	4	1	20	17	10	2	79
	Expected Count	.8	5.0	.2	10.8	4.7	2.6	30.5	16.3	5.0	2.9	79.0
July 2004	Count	3	17	0	13	13	8	54	52	12	10	182
	Expected Count	1.8	11.6	.6	25.0	10.8	6.1	70.4	37.4	11.6	6.7	182.0
Total	Count	13	82	4	176	76	43	496	264	82	47	1283
	Expected Count	13.0	82.0	4.0	176.0	76.0	43.0	496.0	264.0	82.0	47.0	1283.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	402.444 <sup>a</sup>	117	.000
Likelihood Ratio	398.575	117	.000
Linear-by-Linear Association	.141	1	.707
N of Valid Cases	1283		

a. 74 cells (52.9%) have expected count less than 5. The minimum expected count is .09.

Table 27 Crosstabulation of behaviour by month, showing observed and expected counts. Data from Menanggul, OMG, adult age sex categories only for Census.

**months \* Behaviour Crosstabulation**

			Behaviour					Total
			Agonistic	Rest	Travel	Social	Ingestion	
months	June 2003	Count	6	24	6	1	5	42
		Expected Count	5.5	18.5	8.7	2.5	6.8	42.0
	July 2003	Count	8	18	14	5	6	51
		Expected Count	6.7	22.4	10.6	3.1	8.3	51.0
	August 2003	Count	11	11	14	0	9	45
		Expected Count	5.9	19.8	9.3	2.7	7.3	45.0
	September 2003	Count	19	52	19	4	7	101
		Expected Count	13.2	44.4	21.0	6.1	16.4	101.0
	October 2003	Count	3	37	5	9	13	67
		Expected Count	8.7	29.4	13.9	4.1	10.9	67.0
	November 2003	Count	9	19	4	13	14	59
		Expected Count	7.7	25.9	12.2	3.6	9.6	59.0
	December 2003	Count	1	9	2	2	2	16
		Expected Count	2.1	7.0	3.3	1.0	2.6	16.0
	January 2004	Count	1	36	12	0	8	57
		Expected Count	7.4	25.0	11.8	3.5	9.2	57.0
	February 2004	Count	2	34	13	0	2	51
		Expected Count	6.7	22.4	10.6	3.1	8.3	51.0
	March 2004	Count	4	12	8	2	10	36
		Expected Count	4.7	15.8	7.5	2.2	5.8	36.0
	April 2004	Count	4	7	10	2	23	46
		Expected Count	6.0	20.2	9.5	2.8	7.5	46.0
	May 2004	Count	12	60	20	4	18	114
		Expected Count	14.9	50.1	23.7	6.9	18.5	114.0
	June 2004	Count	14	14	12	3	10	53

	Expected Count	6.9	23.3	11.0	3.2	8.6	53.0
July 2004	Count	18	44	39	7	12	120
	Expected Count	15.7	52.7	24.9	7.3	19.4	120.0
Total	Count	112	377	178	52	139	858
	Expected Count	112.0	377.0	178.0	52.0	139.0	858.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	193.160 <sup>a</sup>	52	.000
Likelihood Ratio	190.968	52	.000
N of Valid Cases	858		

a. 15 cells (21.4%) have expected count less than 5. The minimum expected count is .97.

Table 28 Crosstabulation of behaviour by month, showing observed and expected counts. Data from Resang, OMG, all age sex categories for Census.

#### months \* behaviours combined Crosstabulation

		behaviours combined										Total
		agonistic	cling	copulate	ingestion	groom	play	resting	travel	vigilant	vocalise	
months June 2003	Count	0	0	0	0	0	0	0	0	0	1	1
	Expected Count	.0	.1	.0	.1	.0	.0	.3	.4	.0	.0	1.0
July 2003	Count	0	4	0	0	0	0	4	3	2	1	14
	Expected Count	.2	.8	.0	1.3	.3	.5	4.3	5.3	.6	.7	14.0
August 2003	Count	0	1	0	4	1	5	3	16	1	1	32
	Expected Count	.4	1.7	.1	3.0	.7	1.1	9.9	12.2	1.4	1.5	32.0
September 2003	Count	2	7	0	15	0	2	20	34	1	2	83
	Expected Count	1.1	4.5	.1	7.9	1.8	2.7	25.8	31.6	3.5	4.0	83.0
October 2003	Count	3	5	0	8	0	2	44	11	4	0	77
	Expected Count	1.0	4.2	.1	7.3	1.6	2.5	23.9	29.3	3.3	3.7	77.0
November 2003	Count	0	7	1	6	2	2	34	23	1	10	86
	Expected Count	1.1	4.7	.1	8.2	1.8	2.8	26.7	32.8	3.7	4.1	86.0
December 2003	Count	1	2	0	4	4	3	35	31	5	0	85
	Expected Count	1.1	4.6	.1	8.1	1.8	2.8	26.4	32.4	3.6	4.0	85.0
January 2004	Count	0	3	0	10	0	0	16	31	0	3	63
	Expected Count	.8	3.4	.1	6.0	1.3	2.1	19.6	24.0	2.7	3.0	63.0
February 2004	Count	0	0	0	0	0	0	0	17	0	0	17
	Expected Count	.2	.9	.0	1.6	.4	.6	5.3	6.5	.7	.8	17.0
March	Count	1	1	0	4	0	2	15	26	2	3	54

	Expected Count	.7	2.9	.1	5.1	1.2	1.8	16.8	20.6	2.3	2.6	54.0
April 2004	Count	0	1	0	1	2	1	11	9	1	1	27
	Expected Count	.4	1.5	.0	2.6	.6	.9	8.4	10.3	1.2	1.3	27.0
May 2004	Count	0	0	0	1	0	0	2	12	1	2	18
	Expected Count	.2	1.0	.0	1.7	.4	.6	5.6	6.9	.8	.9	18.0
June 2004	Count	1	2	0	4	4	3	5	19	8	5	51
	Expected Count	.7	2.8	.1	4.9	1.1	1.7	15.8	19.4	2.2	2.4	51.0
July 2004	Count	0	0	0	1	0	0	0	0	0	0	1
	Expected Count	.0	.1	.0	.1	.0	.0	.3	.4	.0	.0	1.0
Total	Count	8	33	1	58	13	20	189	232	26	29	609
	Expected Count	8.0	33.0	1.0	58.0	13.0	20.0	189.0	232.0	26.0	29.0	609.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	259.361 <sup>a</sup>	117	.000
Likelihood Ratio	242.886	117	.000
Linear-by-Linear Association	13.841	1	.000
N of Valid Cases	609		

a. 111 cells (79.3%) have expected count less than 5. The minimum expected count is .00.

Table 29 Crosstabulation of behaviour by month, showing observed and expected counts. Data from Resang, OMG, adult age sex categories only for Census.

#### months \* Behaviour Crosstabulation

			Behaviour					Total
			Agonistic	Rest	Travel	Social	Ingestion	
months	June 2003	Count	1	0	0	0	0	1
		Expected Count	.1	.4	.4	.0	.1	1.0
	July 2003	Count	1	4	3	0	0	8
		Expected Count	1.0	2.9	3.0	.2	.8	8.0
	August 2003	Count	2	3	12	1	4	22
		Expected Count	2.6	8.0	8.3	.7	2.3	22.0
	September 2003	Count	5	15	20	0	8	48
		Expected Count	5.8	17.5	18.2	1.5	5.1	48.0
	October 2003	Count	4	34	8	0	8	54
		Expected Count	6.5	19.7	20.5	1.7	5.7	54.0
	November 2003	Count	9	30	19	3	5	66
		Expected Count	7.9	24.1	25.0	2.0	7.0	66.0
	December 2003	Count	6	25	19	3	4	57

	Expected Count	6.8	20.8	21.6	1.7	6.0	57.0
January 2004	Count	3	16	15	0	6	40
	Expected Count	4.8	14.6	15.2	1.2	4.2	40.0
February 2004	Count	0	0	14	0	0	14
	Expected Count	1.7	5.1	5.3	.4	1.5	14.0
March 2004	Count	6	10	17	0	3	36
	Expected Count	4.3	13.1	13.6	1.1	3.8	36.0
April 2004	Count	2	11	7	2	1	23
	Expected Count	2.8	8.4	8.7	.7	2.4	23.0
May 2004	Count	2	2	12	0	1	17
	Expected Count	2.0	6.2	6.4	.5	1.8	17.0
June 2004	Count	10	5	15	4	4	38
	Expected Count	4.6	13.9	14.4	1.2	4.0	38.0
July 2004	Count	0	0	0	0	1	1
	Expected Count	.1	.4	.4	.0	.1	1.0
Total	Count	51	155	161	13	45	425
	Expected Count	51.0	155.0	161.0	13.0	45.0	425.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	117.219 <sup>a</sup>	52	.000
Likelihood Ratio	119.132	52	.000
N of Valid Cases	425		

a. 40 cells (57.1%) have expected count less than 5. The minimum expected count is .03.

Table 30 Crosstabulation of behaviour by month, showing observed and expected counts. Data from Tenagang Besar, OMG, all age sex categories for Census.

#### months \* behaviours combined Crosstabulation

		behaviours combined										Total
		agonistic	cling	copulate	ingestion	groom	play	resting	travel	vigilant	vocalise	
months June 2003	Count	3	6	0	4	0	4	2	15	0	2	36
	Expected Count	.4	2.6	.1	4.4	1.0	1.5	11.0	11.5	1.9	1.8	36.0
July 2003	Count	0	5	0	11	0	0	15	31	4	5	71
	Expected Count	.7	5.1	.1	8.6	1.9	3.0	21.7	22.6	3.8	3.5	71.0
August 2003	Count	0	14	2	8	2	7	32	29	7	0	101
	Expected Count	1.0	7.2	.2	12.3	2.7	4.3	30.8	32.2	5.4	4.9	101.0
September	Count	1	1	0	25	4	7	35	16	3	3	95



	Expected Count	1.0	6.8	.2	11.6	2.6	4.0	29.0	30.2	5.1	4.6	95.0
October 2003	Count	3	8	0	8	8	2	35	35	5	6	110
	Expected Count	1.1	7.8	.2	13.4	3.0	4.6	33.6	35.0	5.9	5.4	110.0
November 2003	Count	2	6	0	10	8	4	33	9	7	5	84
	Expected Count	.9	6.0	.2	10.2	2.3	3.5	25.6	26.7	4.5	4.1	84.0
December 2003	Count	0	0	0	0	0	0	1	2	0	1	4
	Expected Count	.0	.3	.0	.5	.1	.2	1.2	1.3	.2	.2	4.0
January 2004	Count	0	15	0	12	0	3	66	45	4	5	150
	Expected Count	1.5	10.7	.3	18.3	4.1	6.3	45.8	47.8	8.0	7.3	150.0
February 2004	Count	0	0	0	0	0	0	0	15	0	0	15
	Expected Count	.2	1.1	.0	1.8	.4	.6	4.6	4.8	.8	.7	15.0
March 2004	Count	0	0	0	3	0	0	3	1	0	1	8
	Expected Count	.1	.6	.0	1.0	.2	.3	2.4	2.5	.4	.4	8.0
April 2004	Count	0	8	0	2	0	2	24	36	1	5	78
	Expected Count	.8	5.6	.1	9.5	2.1	3.3	23.8	24.8	4.2	3.8	78.0
May 2004	Count	0	2	0	15	1	0	8	10	6	1	43
	Expected Count	.4	3.1	.1	5.2	1.2	1.8	13.1	13.7	2.3	2.1	43.0
June 2004	Count	1	11	0	19	6	16	67	62	18	15	215
	Expected Count	2.2	15.3	.4	26.2	5.8	9.1	65.6	68.4	11.5	10.5	215.0
July 2004	Count	1	0	0	13	0	0	5	34	2	3	58
	Expected Count	.6	4.1	.1	7.1	1.6	2.4	17.7	18.5	3.1	2.8	58.0
Total	Count	11	76	2	130	29	45	326	340	57	52	1068
	Expected Count	11.0	76.0	2.0	130.0	29.0	45.0	326.0	340.0	57.0	52.0	1068.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	334.749 <sup>a</sup>	117	.000
Likelihood Ratio	337.634	117	.000
Linear-by-Linear Association	12.138	1	.000
N of Valid Cases	1068		

a. 89 cells (63.6%) have expected count less than 5. The minimum expected count is .01.

Table 31 Crosstabulation of behaviour by month, showing observed and expected counts. Data from Tenagang Besar, OMG, adult age sex categories only for Census.

months \* Behaviour Crosstabulation

			Behaviour					Total
			Agonistic	Rest	Travel	Social	Ingestion	
months	June 2003	Count	5	1	10	0	3	19
		Expected Count	2.5	6.9	6.2	.7	2.7	19.0
	July 2003	Count	9	13	15	2	6	45
		Expected Count	6.0	16.3	14.8	1.6	6.4	45.0
	August 2003	Count	6	29	20	5	6	66
		Expected Count	8.8	23.9	21.7	2.3	9.4	66.0
	September 2003	Count	6	30	8	3	22	69
		Expected Count	9.2	25.0	22.7	2.4	9.8	69.0
	October 2003	Count	14	29	28	5	6	82
		Expected Count	10.9	29.7	26.9	2.8	11.7	82.0
	November 2003	Count	10	23	6	5	9	53
		Expected Count	7.0	19.2	17.4	1.8	7.5	53.0
	December 2003	Count	1	1	2	0	0	4
		Expected Count	.5	1.4	1.3	.1	.6	4.0
	January 2004	Count	7	57	35	0	11	110
		Expected Count	14.6	39.8	36.1	3.8	15.7	110.0
	February 2004	Count	0	0	13	0	0	13
		Expected Count	1.7	4.7	4.3	.4	1.8	13.0
	March 2004	Count	1	3	1	0	3	8
		Expected Count	1.1	2.9	2.6	.3	1.1	8.0
	April 2004	Count	5	21	30	0	1	57
		Expected Count	7.6	20.6	18.7	2.0	8.1	57.0
	May 2004	Count	6	7	9	1	15	38
		Expected Count	5.1	13.7	12.5	1.3	5.4	38.0
	June 2004	Count	25	54	46	5	16	146
		Expected Count	19.4	52.8	48.0	5.0	20.8	146.0
	July 2004	Count	5	4	24	0	9	42
		Expected Count	5.6	15.2	13.8	1.5	6.0	42.0
Total		Count	100	272	247	26	107	752
		Expected Count	100.0	272.0	247.0	26.0	107.0	752.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	175.019 <sup>a</sup>	52	.000
Likelihood Ratio	186.951	52	.000
N of Valid Cases	752		

a. 27 cells (38.6%) have expected count less than 5. The minimum expected count is .14.

Table 32 Crosstabulation of behaviour by time of day, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories for FDF.

**behaviours combined \* Three times of day Crosstabulation**

		Three times of day			Total	
		5-8	9-14	15-18		
behaviours combined	agonistic	Count	21	8	22	51
		Expected Count	16.3	15.1	19.6	51.0
	cling	Count	48	47	64	159
		Expected Count	50.8	47.1	61.1	159.0
	copulate	Count	2	0	4	6
		Expected Count	1.9	1.8	2.3	6.0
	bodily function	Count	10	95	14	119
		Expected Count	38.0	35.3	45.7	119.0
	ingestion	Count	392	213	622	1227
		Expected Count	391.8	363.8	471.4	1227.0
	groom	Count	96	82	105	283
		Expected Count	90.4	83.9	108.7	283.0
	play	Count	114	43	134	291
		Expected Count	92.9	86.3	111.8	291.0
	resting	Count	1755	1976	2086	5817
		Expected Count	1857.5	1724.6	2234.9	5817.0
	travel	Count	1016	703	1119	2838
		Expected Count	906.2	841.4	1090.3	2838.0
	vigilant	Count	163	173	166	502
		Expected Count	160.3	148.8	192.9	502.0
	vocalise	Count	129	138	171	438
		Expected Count	139.9	129.9	168.3	438.0
Total		Count	3746	3478	4507	11731
		Expected Count	3746.0	3478.0	4507.0	11731.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	392.212 <sup>a</sup>	20	.000
Likelihood Ratio	389.482	20	.000
Linear-by-Linear Association	9.897	1	.002
N of Valid Cases	11731		

a. 3 cells (9.1%) have expected count less than 5. The minimum expected count is 1.78.

Table 33 Crosstabulation of behaviour by time of day, showing observed and expected counts. Data from Menanggal, OMG, adult age sex categories only for FDF.

**Behaviour \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
Behaviour	Agonistic	Count	213	226	268	707
		Expected Count	227.1	207.5	272.3	707.0
	Rest	Count	1315	1501	1542	4358
		Expected Count	1400.2	1279.2	1678.6	4358.0
	Travel	Count	725	473	756	1954
		Expected Count	627.8	573.6	752.6	1954.0
	Social	Count	90	57	93	240
		Expected Count	77.1	70.4	92.4	240.0
	Ingestion	Count	297	155	506	958
		Expected Count	307.8	281.2	369.0	958.0
Total		Count	2640	2412	3165	8217
		Expected Count	2640.0	2412.0	3165.0	8217.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	202.648 <sup>a</sup>	8	.000
Likelihood Ratio	207.261	8	.000
N of Valid Cases	8217		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 70.45.

Table 34 Crosstabulation of behaviour by time of day, showing observed and expected counts. Data from Resang, OMG, all age sex categories for FDF.

**behaviours combined \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
behaviours combined	agonistic	Count	3	6	25	34
		Expected Count	12.8	13.1	8.1	34.0
	cling	Count	28	11	20	59
		Expected Count	22.3	22.7	14.0	59.0
	bodily function	Count	19	34	4	57
		Expected Count	21.5	21.9	13.5	57.0
	ingestion	Count	179	67	232	478
		Expected Count	180.6	183.8	113.5	478.0
	groom	Count	48	53	39	140
		Expected Count	52.9	53.8	33.3	140.0
	play	Count	27	19	37	83
		Expected Count	31.4	31.9	19.7	83.0
	resting	Count	830	1502	355	2687
		Expected Count	1015.4	1033.3	638.3	2687.0

travel	Count	906	410	514	1830
	Expected Count	691.6	703.8	434.7	1830.0
vigilant	Count	171	160	160	491
	Expected Count	185.5	188.8	116.6	491.0
vocalise	Count	56	45	39	140
	Expected Count	52.9	53.8	33.3	140.0
Total	Count	2267	2307	1425	5999
	Expected Count	2267.0	2307.0	1425.0	5999.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	890.860 <sup>a</sup>	18	.000
Likelihood Ratio	891.970	18	.000
Linear-by-Linear Association	14.629	1	.000
N of Valid Cases	5999		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.08.

Table 35 Crosstabulation of behaviour by time of day, showing observed and expected counts. Data from Resang, OMG, adult age sex categories only for FDF.

#### Behaviour \* Three times of day Crosstabulation

			Three times of day			Total
			5-8	9-14	15-18	
Behaviour	Agonistic	Count	169	142	167	478
		Expected Count	190.7	171.3	116.0	478.0
	Rest	Count	575	924	239	1738
		Expected Count	693.3	622.9	421.8	1738.0
	Travel	Count	613	221	314	1148
		Expected Count	457.9	411.4	278.6	1148.0
	Social	Count	37	32	35	104
		Expected Count	41.5	37.3	25.2	104.0
	Ingestion	Count	123	44	168	335
		Expected Count	133.6	120.1	81.3	335.0
Total		Count	1517	1363	923	3803
		Expected Count	1517.0	1363.0	923.0	3803.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	566.481 <sup>a</sup>	8	.000
Likelihood Ratio	567.309	8	.000
N of Valid Cases	3803		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 25.24.

Table 36 Crosstabulation of behaviour by time of day, showing observed and expected counts. Data from Tenagang Besar, OMG, all age sex categories for FDF.

behaviours combined \* Three times of day Crosstabulation

			Three times of day			Total
			5-8	9-14	15-18	
behaviours combined	agonistic	Count	10	5	8	23
		Expected Count	6.8	9.2	7.0	23.0
	cling	Count	32	27	24	83
		Expected Count	24.4	33.3	25.3	83.0
	bodily function	Count	15	30	12	57
		Expected Count	16.8	22.9	17.4	57.0
	ingestion	Count	336	181	279	796
		Expected Count	233.9	319.2	242.9	796.0
	groom	Count	56	60	54	170
		Expected Count	50.0	68.2	51.9	170.0
	play	Count	73	27	75	175
		Expected Count	51.4	70.2	53.4	175.0
	resting	Count	792	2106	1018	3916
		Expected Count	1150.8	1570.2	1195.1	3916.0
	travel	Count	611	289	560	1460
		Expected Count	429.0	585.4	445.6	1460.0
	vigilant	Count	84	64	71	219
		Expected Count	64.4	87.8	66.8	219.0
	vocalise	Count	68	45	56	169
		Expected Count	49.7	67.8	51.6	169.0
Total		Count	2077	2834	2157	7068
		Expected Count	2077.0	2834.0	2157.0	7068.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	772.299 <sup>a</sup>	18	.000
Likelihood Ratio	805.453	18	.000
Linear-by-Linear Association	.151	1	.698
N of Valid Cases	7068		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.76.

Table 37 Crosstabulation of behaviour by time of day, showing observed and expected counts. Data from Tenagang Besar, OMG, adult age sex categories only for FDF.

Behaviour \* Three times of day Crosstabulation

			Three times of day			Total
			5-8	9-14	15-18	
Behaviour	Agonistic	Count	118	78	100	296
		Expected Count	85.7	121.4	89.0	296.0
	Rest	Count	590	1571	747	2908
		Expected Count	841.6	1192.2	874.2	2908.0
	Travel	Count	423	188	388	999
		Expected Count	289.1	409.6	300.3	999.0

Social	Count	49	44	46	139
	Expected Count	40.2	57.0	41.8	139.0
Ingestion	Count	241	132	195	568
	Expected Count	164.4	232.9	170.7	568.0
Total	Count	1421	2013	1476	4910
	Expected Count	1421.0	2013.0	1476.0	4910.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	538.727 <sup>a</sup>	8	.000
Likelihood Ratio	562.540	8	.000
N of Valid Cases	4910		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 40.23.

Table 38 Crosstabulation of behaviour by time of day, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories for Census.

#### Three times of day \* behaviours combined Crosstabulation

		Three times of day				Total	
		5-8		15-18			
		Count	Expected Count	Count	Expected Count	Count	Expected Count
behaviours combined	agonistic	1	6.6	12	6.4	13	13.0
	cling	46	41.4	36	40.6	82	82.0
	bodily function	3	2.0	1	2.0	4	4.0
	ingestion	85	88.8	91	87.2	176	176.0
	groom	39	38.3	37	37.7	76	76.0
	play	22	21.7	21	21.3	43	43.0
	resting	227	250.1	269	245.9	496	496.0
	travel	168	133.1	96	130.9	264	264.0
	vigilant	38	41.4	44	40.6	82	82.0
	vocalise	18	23.7	29	23.3	47	47.0
Total		647	647.0	636	636.0	1283	1283.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	37.922 <sup>a</sup>	9	.000
Likelihood Ratio	39.912	9	.000
Linear-by-Linear Association	.052	1	.820
N of Valid Cases	1283		

a. 2 cells (10.0%) have expected count less than 5. The minimum expected count is 1.98.

Table 39 Crosstabulation of behaviour by time of day, showing observed and expected counts. Data from Menanggul, OMG, adult age sex categories for Census.

#### Behaviour \* Three times of day Crosstabulation

			Three times of day		Total
			5-8	15-18	
Behaviour	Agonistic	Count	46	66	112
		Expected Count	57.2	54.8	112.0
	Rest	Count	176	201	377
		Expected Count	192.5	184.5	377.0
	Travel	Count	122	56	178
		Expected Count	90.9	87.1	178.0
	Social	Count	30	22	52
		Expected Count	26.5	25.5	52.0
	Ingestion	Count	64	75	139
		Expected Count	71.0	68.0	139.0
Total		Count	438	420	858
		Expected Count	438.0	420.0	858.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.439 <sup>a</sup>	4	.000
Likelihood Ratio	32.045	4	.000
N of Valid Cases	858		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 25.45.

Table 40 Crosstabulation of behaviour by time of day, showing observed and expected counts. Data from Resang, OMG, all age sex categories for Census.

#### Three times of day \* behaviours combined Crosstabulation

		Three times of day				Total	
		5-8		15-18			
		Count	Expected Count	Count	Expected Count	Count	Expected Count
behaviours combined	agonistic	3	4.0	5	4.0	8	8.0
	cling	17	16.5	16	16.5	33	33.0
	copulate	0	.5	1	.5	1	1.0
	ingestion	23	29.0	35	29.0	58	58.0
	groom	4	6.5	9	6.5	13	13.0
	play	5	10.0	15	10.0	20	20.0
	resting	56	94.3	133	94.7	189	189.0
	travel	162	115.8	70	116.2	232	232.0
	vigilant	14	13.0	12	13.0	26	26.0
	vocalise	20	14.5	9	14.5	29	29.0
Total		304	304.0	305	305.0	609	609.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	83.114 <sup>a</sup>	9	.000



Likelihood Ratio	85.866	9	.000
Linear-by-Linear Association	19.420	1	.000
N of Valid Cases	609		

a. 4 cells (20.0%) have expected count less than 5. The minimum expected count is .50.

Table 41 Crosstabulation of behaviour by time of day, showing observed and expected counts. Data from Resang, OMG, adult age sex categories only for Census.

**Behaviour \* Three times of day Crosstabulation**

			Three times of day		Total
			5-8	15-18	
Behaviour	Agonistic	Count	28	23	51
		Expected Count	26.0	25.0	51.0
	Rest	Count	50	105	155
		Expected Count	79.1	75.9	155.0
	Travel	Count	115	46	161
		Expected Count	82.2	78.8	161.0
	Social	Count	4	9	13
		Expected Count	6.6	6.4	13.0
	Ingestion	Count	20	25	45
		Expected Count	23.0	22.0	45.0
Total		Count	217	208	425
		Expected Count	217.0	208.0	425.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	51.889 <sup>a</sup>	4	.000
Likelihood Ratio	53.329	4	.000
N of Valid Cases	425		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.36.

Table 42 Crosstabulation of behaviour by time of day, showing observed and expected counts. Data from Tenagang Besar, OMG, all age sex categories for Census.

**Three times of day \* behaviours combined Crosstabulation**

		Three times of day				Total	
		5-8		15-18			
		Count	Expected Count	Count	Expected Count	Count	Expected Count
behaviours combined	agonistic	2	4.3	9	6.7	11	11.0
	cling	18	29.7	58	46.3	76	76.0
	copulate	2	.8	0	1.2	2	2.0
	ingestion	55	50.9	75	79.1	130	130.0
	groom	4	11.4	25	17.6	29	29.0
	play	11	17.6	34	27.4	45	45.0
	resting	107	127.6	219	198.4	326	326.0
	travel	177	133.1	163	206.9	340	340.0

	vigilant	21	22.3	36	34.7	57	57.0
	vocalise	21	20.4	31	31.6	52	52.0
Total		418	418.0	650	650.0	1068	1068.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	54.654 <sup>a</sup>	9	.000
Likelihood Ratio	57.074	9	.000
Linear-by-Linear Association	10.102	1	.001
N of Valid Cases	1068		

a. 3 cells (15.0%) have expected count less than 5. The minimum expected count is .78.

Table 43 Crosstabulation of behaviour by time of day, showing observed and expected counts. Data from Tenang Besar, OMG, adult age sex categories only for Census.

#### Behaviour \* Three times of day Crosstabulation

			Three times of day		Total
			5-8	15-18	
Behaviour	Agonistic	Count	34	66	100
		Expected Count	40.4	59.6	100.0
	Rest	Count	90	182	272
		Expected Count	110.0	162.0	272.0
	Travel	Count	129	118	247
		Expected Count	99.9	147.1	247.0
	Social	Count	7	19	26
		Expected Count	10.5	15.5	26.0
	Ingestion	Count	44	63	107
		Expected Count	43.3	63.7	107.0
Total		Count	304	448	752
		Expected Count	304.0	448.0	752.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	24.068 <sup>a</sup>	4	.000
Likelihood Ratio	24.053	4	.000
N of Valid Cases	752		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.51.

Table 44 Crosstabulation of age sex category by month showing observed and expected counts. Data from Menanggul, OMG, all age sex categories for FDF.

#### months \* Age Sex Group Crosstabulation

	Age Sex Group								Total
	Adult male	Adult Female	Subadult male	Subadult female	Subadult unknown	Juvenile	Infant	Unknown	
months September Count	76	60	6	4	106	61	50	5	368

	Expected Count	40.1	78.6	5.5	7.9	128.0	56.2	37.8	13.8	368.0
October 2003	Count	0	4	0	0	11	7	2	5	29
	Expected Count	3.2	6.2	.4	.6	10.1	4.4	3.0	1.1	29.0
November 2003	Count	15	74	10	9	44	26	60	7	245
	Expected Count	26.7	52.4	3.7	5.3	85.2	37.4	25.2	9.2	245.0
January 2004	Count	172	537	5	50	825	308	308	6	2211
	Expected Count	240.9	472.5	33.2	47.7	768.8	337.9	227.1	82.9	2211.0
February 2004	Count	62	302	1	4	398	218	136	0	1121
	Expected Count	122.1	239.6	16.8	24.2	389.8	171.3	115.1	42.0	1121.0
March 2004	Count	249	390	124	166	489	224	6	0	1648
	Expected Count	179.5	352.2	24.7	35.5	573.0	251.9	169.3	61.8	1648.0
April 2004	Count	197	312	21	18	651	236	149	11	1595
	Expected Count	173.8	340.9	23.9	34.4	554.6	243.8	163.8	59.8	1595.0
May 2004	Count	226	312	0	0	688	154	134	83	1597
	Expected Count	174.0	341.3	24.0	34.4	555.3	244.1	164.0	59.9	1597.0
June 2004	Count	154	223	0	0	541	372	127	108	1525
	Expected Count	166.1	325.9	22.9	32.9	530.3	233.1	156.6	57.2	1525.0
July 2004	Count	127	293	9	2	326	187	233	215	1392
	Expected Count	151.6	297.5	20.9	30.0	484.0	212.8	143.0	52.2	1392.0
Total	Count	1278	2507	176	253	4079	1793	1205	440	11731
	Expected Count	1278.0	2507.0	176.0	253.0	4079.0	1793.0	1205.0	440.0	11731.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2718.424 <sup>a</sup>	63	.000
Likelihood Ratio	2504.813	63	.000
Linear-by-Linear Association	84.245	1	.000
N of Valid Cases	11731		

a. 7 cells (8.8%) have expected count less than 5. The minimum expected count is .44.

Table 45 Crosstabulation of age sex category by month, showing observed and expected counts. Data from Resang, OMG, all age sex categories for FDF.

#### Age Sex Group \* months Crosstabulation

	months								Total	
	October 2003	January 2004	February 2004	March 2004	April 2004	May 2004	June 2004	July 2004		
Age Sex Group										
Adult male	Count	0	26	9	49	104	196	66	83	533
	Expected Count	2.0	36.2	9.1	38.9	103.9	149.0	95.2	98.8	533.0

Ault Female	Count	5	70	8	129	203	259	73	104	851
	Expected Count	3.1	57.7	14.5	62.1	165.8	237.9	152.1	157.7	851.0
Subadult male	Count	0	2	0	3	0	0	0	0	5
	Expected Count	.0	.3	.1	.4	1.0	1.4	.9	.9	5.0
Subadult female	Count	0	3	0	0	8	1	1	0	13
	Expected Count	.0	.9	.2	.9	2.5	3.6	2.3	2.4	13.0
Subadult unknown	Count	10	202	49	181	477	699	467	354	2439
	Expected Count	8.9	165.5	41.5	178.1	475.3	681.8	435.8	452.1	2439.0
Juvenile	Count	1	87	16	51	243	226	198	242	1064
	Expected Count	3.9	72.2	18.1	77.7	207.3	297.4	190.1	197.2	1064.0
Infant	Count	4	16	8	25	131	161	63	75	483
	Expected Count	1.8	32.8	8.2	35.3	94.1	135.0	86.3	89.5	483.0
Unknown	Count	2	1	12	0	3	135	204	254	611
	Expected Count	2.2	41.5	10.4	44.6	119.1	170.8	109.2	113.3	611.0
Total	Count	22	407	102	438	1169	1677	1072	1112	5999
	Expected Count	22.0	407.0	102.0	438.0	1169.0	1677.0	1072.0	1112.0	5999.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	823.265 <sup>a</sup>	49	.000
Likelihood Ratio	923.818	49	.000
Linear-by-Linear Association	189.969	1	.000
N of Valid Cases	5999		

a. 21 cells (32.8%) have expected count less than 5. The minimum expected count is .02.

Table 46 Crosstabulation of age sex category by month, showing observed and expected counts. Data from Tenagang Besar, OMG, all age sex categories for FDF.

#### Age Sex Group \* months Crosstabulation

			months							Total	
			September 2003	November 2003	January 2004	February 2004	March 2004	April 2004	May 2004		June 2004
Age Sex Group	Adult male	Count	5	51	11	8	138	110	26	115	464
		Expected Count	2.0	37.7	6.5	9.5	119.3	121.4	53.2	114.3	464.0
	Ault Female	Count	6	165	3	42	409	264	69	322	1280
		Expected Count	5.6	104.0	17.9	26.1	329.2	335.0	146.9	315.3	1280.0
	Subadult male	Count	0	1	0	0	14	0	0	0	15
		Expected Count	.1	1.2	.2	.3	3.9	3.9	1.7	3.7	15.0
	Subadult	Count	0	12	0	0	21	0	1	0	34

	Expected Count	.1	2.8	.5	.7	8.7	8.9	3.9	8.4	34.0
Subadult unknown	Count	6	156	71	38	800	902	433	753	3159
	Expected Count	13.9	256.5	44.2	64.4	812.5	826.8	362.5	778.1	3159.0
Juvenile	Count	7	57	11	39	277	363	172	281	1207
	Expected Count	5.3	98.0	16.9	24.6	310.5	315.9	138.5	297.3	1207.0
Infant	Count	7	113	3	17	158	134	34	84	550
	Expected Count	2.4	44.7	7.7	11.2	141.5	144.0	63.1	135.5	550.0
Unknown	Count	0	19	0	0	1	77	76	186	359
	Expected Count	1.6	29.2	5.0	7.3	92.3	94.0	41.2	88.4	359.0
Total	Count	31	574	99	144	1818	1850	811	1741	7068
	Expected Count	31.0	574.0	99.0	144.0	1818.0	1850.0	811.0	1741.0	7068.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	812.521 <sup>a</sup>	49	.000
Likelihood Ratio	867.567	49	.000
Linear-by-Linear Association	61.715	1	.000
N of Valid Cases	7068		

a. 16 cells (25.0%) have expected count less than 5. The minimum expected count is .07.

Table 47 Crosstabulation of age sex category by month, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories for Census.

#### months \* Age Sex Group Crosstabulation

		Age Sex Group							Total	
		Adult male	Ault Female	Subadult male	Subadult female	Subadult unknown	Juvenile	Infant		Unknown
months June 2003	Count	8	10	10	11	3	16	7	0	65
	Expected Count	6.6	13.8	3.1	2.2	17.8	11.0	8.3	2.1	65.0
July 2003	Count	15	9	7	9	11	20	3	0	74
	Expected Count	7.6	15.7	3.5	2.5	20.2	12.6	9.4	2.4	74.0
August 2003	Count	8	12	4	2	19	19	6	3	73
	Expected Count	7.5	15.5	3.5	2.5	20.0	12.4	9.3	2.4	73.0
September 2003	Count	15	35	9	7	36	31	20	0	153
	Expected Count	15.6	32.6	7.3	5.2	41.9	26.0	19.4	5.0	153.0
October 2003	Count	7	26	2	8	24	14	16	0	97
	Expected Count	9.9	20.6	4.6	3.3	26.5	16.5	12.3	3.2	97.0
November 2003	Count	12	12	13	0	22	9	10	3	81
	Expected Count	8.3	17.2	3.9	2.8	22.2	13.8	10.3	2.7	81.0

December 2003	Count	2	5	0	0	9	6	4	2	28
	Expected Count	2.9	6.0	1.3	1.0	7.7	4.8	3.6	.9	28.0
January 2004	Count	8	10	0	1	38	7	9	16	89
	Expected Count	9.1	18.9	4.2	3.1	24.3	15.1	11.3	2.9	89.0
February 2004	Count	5	15	0	0	31	4	12	0	67
	Expected Count	6.8	14.3	3.2	2.3	18.3	11.4	8.5	2.2	67.0
March 2004	Count	8	10	3	1	15	8	5	9	59
	Expected Count	6.0	12.6	2.8	2.0	16.1	10.0	7.5	1.9	59.0
April 2004	Count	7	17	8	1	13	19	5	0	70
	Expected Count	7.1	14.9	3.3	2.4	19.2	11.9	8.9	2.3	70.0
May 2004	Count	13	43	3	3	52	23	23	6	166
	Expected Count	16.9	35.3	7.9	5.7	45.4	28.2	21.1	5.4	166.0
June 2004	Count	7	21	0	1	24	11	14	1	79
	Expected Count	8.1	16.8	3.8	2.7	21.6	13.4	10.0	2.6	79.0
July 2004	Count	16	48	2	0	54	31	29	2	182
	Expected Count	18.6	38.7	8.7	6.2	49.8	30.9	23.1	6.0	182.0
Total	Count	131	273	61	44	351	218	163	42	1283
	Expected Count	131.0	273.0	61.0	44.0	351.0	218.0	163.0	42.0	1283.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	364.727 <sup>a</sup>	91	.000
Likelihood Ratio	335.030	91	.000
Linear-by-Linear Association	1.978	1	.160
N of Valid Cases	1283		

a. 36 cells (32.1%) have expected count less than 5. The minimum expected count is .92.

Table 48 Crosstabulation of age sex category by month, showing observed and expected counts. Data from Resang, OMG, all age sex categories for Census.

Age Sex Group \* months Crosstabulation

			months												Total		
			June 2003	July 2003	August 2003	September 2003	October 2003	November 2003	December 2003	January 2004	February 2004	March 2004	April 2004	May 2004		June 2004	July 2004
Age Sex Group	Adult male	Count	1	2	1	5	4	8	3	3	1	4	3	2	5	0	42
		Expected Count	.1	1.0	2.2	5.7	5.3	5.9	5.9	4.3	1.2	3.7	1.9	1.2	3.5	.1	42.0
	Ault Female	Count	0	4	9	17	13	21	18	9	1	10	8	0	11	1	122
		Expected Count	.2	2.8	6.4	16.6	15.4	17.2	17.0	12.6	3.4	10.8	5.4	3.6	10.2	.2	122.0
	Subadult male	Count	0	0	1	1	2	4	0	0	0	1	0	2	0	0	11
		Expected Count	.0	.3	.6	1.5	1.4	1.6	1.5	1.1	.3	1.0	.5	.3	.9	.0	11.0
	Subadult female	Count	0	0	3	3	0	3	0	3	0	0	0	4	0	0	16
		Expected Count	.0	.4	.8	2.2	2.0	2.3	2.2	1.7	.4	1.4	.7	.5	1.3	.0	16.0
	Subadult unknown	Count	0	2	8	22	35	30	36	25	12	21	12	9	22	0	234
		Expected Count	.4	5.4	12.3	31.9	29.6	33.0	32.7	24.2	6.5	20.7	10.4	6.9	19.6	.4	234.0
	Juvenile	Count	0	4	9	17	13	5	16	17	2	13	2	1	2	0	101
		Expected Count	.2	2.3	5.3	13.8	12.8	14.3	14.1	10.4	2.8	9.0	4.5	3.0	8.5	.2	101.0
	Infant	Count	0	2	1	16	10	10	8	5	1	3	2	0	5	0	63
		Expected Count	.1	1.4	3.3	8.6	8.0	8.9	8.8	6.5	1.8	5.6	2.8	1.9	5.3	.1	63.0
	Unknown	Count	0	0	0	2	0	5	4	1	0	2	0	0	6	0	20

	Expected Count	.0	.5	1.1	2.7	2.5	2.8	2.8	2.1	.6	1.8	.9	.6	1.7	.0	20.0
Total	Count	1	14	32	83	77	86	85	63	17	54	27	18	51	1	609
	Expected Count	1.0	14.0	32.0	83.0	77.0	86.0	85.0	63.0	17.0	54.0	27.0	18.0	51.0	1.0	609.0

### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	166.326 <sup>a</sup>	91	.000
Likelihood Ratio	156.323	91	.000
Linear-by-Linear Association	.080	1	.777
N of Valid Cases	609		

a. 72 cells (64.3%) have expected count less than 5. The minimum expected count is .02.

Table 49 Crosstabulation of age sex category by month, showing observed and expected counts. Data from Tenagang Besar, OMG, all age sex categories for Census.

### Age Sex Group \* months Crosstabulation

			months												Total		
			June 2003	July 2003	August 2003	September 2003	October 2003	November 2003	December 2003	January 2004	February 2004	March 2004	April 2004	May 2004		June 2004	July 2004
Age Sex Group	Adult male	Count	3	8	9	7	7	6	1	6	1	3	7	6	19	4	87
		Expected Count	2.9	5.8	8.2	7.7	9.0	6.8	.3	12.2	1.2	.7	6.4	3.5	17.5	4.7	87.0
	Ault Female	Count	9	6	24	15	27	18	0	30	1	0	14	8	44	13	209
		Expected Count	7.0	13.9	19.8	18.6	21.5	16.4	.8	29.4	2.9	1.6	15.3	8.4	42.1	11.4	209.0
	Subadult male	Count	5	8	6	1	12	1	0	1	0	0	2	5	1	0	42
		Expected Count	1.4	2.8	4.0	3.7	4.3	3.3	.2	5.9	.6	.3	3.1	1.7	8.5	2.3	42.0



Subadult female	Count	1	14	3	1	5	7	0	6	0	0	4	0	4	0	45
	Expected Count	1.5	3.0	4.3	4.0	4.6	3.5	.2	6.3	.6	.3	3.3	1.8	9.1	2.4	45.0
Subadult unknown	Count	1	9	24	45	31	21	3	67	11	5	30	19	78	25	369
	Expected Count	12.4	24.5	34.9	32.8	38.0	29.0	1.4	51.8	5.2	2.8	26.9	14.9	74.3	20.0	369.0
Juvenile	Count	10	18	24	9	11	7	0	17	1	0	11	3	39	10	160
	Expected Count	5.4	10.6	15.1	14.2	16.5	12.6	.6	22.5	2.2	1.2	11.7	6.4	32.2	8.7	160.0
Infant	Count	7	5	11	14	16	17	0	22	1	0	9	2	26	5	135
	Expected Count	4.6	9.0	12.8	12.0	13.9	10.6	.5	19.0	1.9	1.0	9.9	5.4	27.2	7.3	135.0
Unknown	Count	0	3	0	3	1	7	0	1	0	0	1	0	4	1	21
	Expected Count	.7	1.4	2.0	1.9	2.2	1.7	.1	2.9	.3	.2	1.5	.8	4.2	1.1	21.0
Total	Count	36	71	101	95	110	84	4	150	15	8	78	43	215	58	1068
	Expected Count	36.0	71.0	101.0	95.0	110.0	84.0	4.0	150.0	15.0	8.0	78.0	43.0	215.0	58.0	1068.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	258.395 <sup>a</sup>	91	.000
Likelihood Ratio	249.530	91	.000
Linear-by-Linear Association	.024	1	.878
N of Valid Cases	1068		

a. 56 cells (50.0%) have expected count less than 5. The minimum expected count is .08.

Table 50 Crosstabulation of age sex category by time of day, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories for FDF.

**Three times of day \* Age Sex Group Crosstabulation**

		Age Sex Group							Total	
		Adult male	Ault Female	Subadult male	Subadult female	Subadult unknown	Juvenile	Infant		Unknown
Three times of day	5-8 Count	360	874	47	68	1298	564	434	101	3746
	Expected Count	408.1	800.5	56.2	80.8	1302.5	572.5	384.8	140.5	3746.0
	9-14 Count	449	688	54	86	1193	526	283	199	3478
	Expected Count	378.9	743.3	52.2	75.0	1209.3	531.6	357.3	130.5	3478.0
	15-18 Count	469	945	75	99	1588	703	488	140	4507
	Expected Count	491.0	963.2	67.6	97.2	1567.1	688.9	463.0	169.0	4507.0
Total	Count	1278	2507	176	253	4079	1793	1205	440	11731
	Expected Count	1278.0	2507.0	176.0	253.0	4079.0	1793.0	1205.0	440.0	11731.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	113.053 <sup>a</sup>	14	.000
Likelihood Ratio	109.996	14	.000
Linear-by-Linear Association	.477	1	.490
N of Valid Cases	11731		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 52.18.

Table 51 Crosstabulation of age sex category by time of day, showing observed and expected counts. Data from Resang, OMG, all age sex categories for FDF.

**Age Sex Group \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
Age Sex Group	Adult male	Count	183	257	93	533
		Expected Count	201.4	205.0	126.6	533.0
	Ault Female	Count	369	249	233	851
		Expected Count	321.6	327.3	202.1	851.0
	Subadult male	Count	4	0	1	5
		Expected Count				

	Expected Count	1.9	1.9	1.2	5.0
Subadult female	Count	7	1	5	13
	Expected Count	4.9	5.0	3.1	13.0
Subadult unknown	Count	968	878	593	2439
	Expected Count	921.7	938.0	579.4	2439.0
Juvenile	Count	383	417	264	1064
	Expected Count	402.1	409.2	252.7	1064.0
Infant	Count	178	170	135	483
	Expected Count	182.5	185.7	114.7	483.0
Unknown	Count	175	335	101	611
	Expected Count	230.9	235.0	145.1	611.0
Total	Count	2267	2307	1425	5999
	Expected Count	2267.0	2307.0	1425.0	5999.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	146.410 <sup>a</sup>	14	.000
Likelihood Ratio	147.920	14	.000
Linear-by-Linear Association	3.622	1	.057
N of Valid Cases	5999		

a. 6 cells (25.0%) have expected count less than 5. The minimum expected count is 1.19.

Table 52 Crosstabulation of age sex category by time of day, showing observed and expected counts. Data from Tenang Besar, OMG, all age sex categories for FDF.

#### Age Sex Group \* Three times of day Crosstabulation

			Three times of day			Total
			5-8	9-14	15-18	
Age Sex Group	Adult male	Count	153	152	159	464
		Expected Count	136.4	186.0	141.6	464.0
	Ault Female	Count	381	512	387	1280
		Expected Count	376.1	513.2	390.6	1280.0
	Subadult male	Count	7	0	8	15
		Expected Count	4.4	6.0	4.6	15.0
	Subadult female	Count	9	18	7	34
		Expected Count	10.0	13.6	10.4	34.0
	Subadult unknown	Count	884	1352	923	3159
		Expected Count	928.3	1266.6	964.1	3159.0
	Juvenile	Count	360	441	406	1207
		Expected Count	354.7	484.0	368.4	1207.0
	Infant	Count	161	195	194	550
		Expected Count	161.6	220.5	167.8	550.0
	Unknown	Count	122	164	73	359
		Expected Count	105.5	143.9	109.6	359.0
Total	Count	2077	2834	2157	7068	
	Expected Count	2077.0	2834.0	2157.0	7068.0	

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	65.158 <sup>a</sup>	14	.000
Likelihood Ratio	71.992	14	.000
Linear-by-Linear Association	.168	1	.681
N of Valid Cases	7068		

a. 2 cells (8.3%) have expected count less than 5. The minimum expected count is 4.41.

Table 53 Crosstabulation of age sex category by time of day, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories for Census.

**Three times of day \* Age Sex Group Crosstabulation**

		Three times of day				Total	
		5-8		15-18			
		Count	Expected Count	Count	Expected Count	Count	Expected Count
Age Sex Group	Adult male	65	66.1	66	64.9	131	131.0
	Ault Female	136	137.7	137	135.3	273	273.0
	Subadult male	20	30.8	41	30.2	61	61.0
	Subadult female	21	22.2	23	21.8	44	44.0
	Subadult unknown	197	177.0	154	174.0	351	351.0
	Juvenile	96	109.9	122	108.1	218	218.0
	Infant	82	82.2	81	80.8	163	163.0
	Unknown	30	21.2	12	20.8	42	42.0
Total		647	647.0	636	636.0	1283	1283.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	23.328 <sup>a</sup>	7	.001
Likelihood Ratio	23.753	7	.001
Linear-by-Linear Association	1.403	1	.236
N of Valid Cases	1283		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 20.82.

Table 54 Crosstabulation of age sex category by time of day, showing observed and expected counts. Data from Resang, OMG, all age sex categories for Census.

**Age Sex Group \* Three times of day Crosstabulation**

			Three times of day		Total
			5-8	15-18	
Age Sex Group	Adult male	Count	23	19	42
		Expected Count	21.0	21.0	42.0
	Ault Female	Count	53	69	122
		Expected Count	60.9	61.1	122.0
	Subadult male	Count	3	8	11
		Expected Count			

	Expected Count	5.5	5.5	11.0
Subadult female	Count	8	8	16
	Expected Count	8.0	8.0	16.0
Subadult unknown	Count	130	104	234
	Expected Count	116.8	117.2	234.0
Juvenile	Count	45	56	101
	Expected Count	50.4	50.6	101.0
Infant	Count	29	34	63
	Expected Count	31.4	31.6	63.0
Unknown	Count	13	7	20
	Expected Count	10.0	10.0	20.0
Total	Count	304	305	609
	Expected Count	304.0	305.0	609.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.034 <sup>a</sup>	7	.137
Likelihood Ratio	11.163	7	.132
Linear-by-Linear Association	.665	1	.415
N of Valid Cases	609		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.49.

Table 55 Crosstabulation of age sex category by time of day, showing observed and expected counts. Data from Tenagang Besar, OMG, all age sex categories for Census.

#### Age Sex Group \* Three times of day Crosstabulation

			Three times of day		Total
			5-8	15-18	
Age Sex Group	Adult male	Count	36	51	87
		Expected Count	34.1	52.9	87.0
	Ault Female	Count	73	136	209
		Expected Count	81.8	127.2	209.0
	Subadult male	Count	4	38	42
		Expected Count	16.4	25.6	42.0
	Subadult female	Count	7	38	45
		Expected Count	17.6	27.4	45.0
	Subadult unknown	Count	184	185	369
		Expected Count	144.4	224.6	369.0
	Juvenile	Count	64	96	160
		Expected Count	62.6	97.4	160.0
	Infant	Count	40	95	135
		Expected Count	52.8	82.2	135.0
	Unknown	Count	10	11	21
		Expected Count	8.2	12.8	21.0
Total		Count	418	650	1068
		Expected Count	418.0	650.0	1068.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	51.339 <sup>a</sup>	7	.000
Likelihood Ratio	55.943	7	.000
Linear-by-Linear Association	1.286	1	.257
N of Valid Cases	1068		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.22.

Table 56 Crosstabulation of age sex category by time of day for Agonistic behaviour, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories for FDF

**Age Sex Group \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
Age Sex Group	Adult male	Count	98	113	129	340
		Expected Count	107.4	109.4	123.2	340.0
	Ault Female	Count	34	43	39	116
		Expected Count	36.6	37.3	42.0	116.0
	Subadult male	Count	2	2	5	9
		Expected Count	2.8	2.9	3.3	9.0
	Subadult female	Count	3	3	3	9
		Expected Count	2.8	2.9	3.3	9.0
	Subadult unknown	Count	76	65	92	233
		Expected Count	73.6	75.0	84.4	233.0
	Juvenile	Count	63	60	65	188
		Expected Count	59.4	60.5	68.1	188.0
	Infant	Count	36	31	25	92
		Expected Count	29.1	29.6	33.3	92.0
	Unknown	Count	1	2	1	4
		Expected Count	1.3	1.3	1.4	4.0
Total		Count	313	319	359	991
		Expected Count	313.0	319.0	359.0	991.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.822 <sup>a</sup>	14	.700
Likelihood Ratio	10.828	14	.700
Linear-by-Linear Association	2.929	1	.087
N of Valid Cases	991		

a. 9 cells (37.5%) have expected count less than 5. The minimum expected count is 1.26.

Table 57 Crosstabulation of age sex category by time of day for Social behaviour, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories for FDF

**Age Sex Group \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
Age Sex Group	Adult male	Count	8	9	9	26
		Expected Count	8.2	8.1	9.7	26.0
	Ault Female	Count	31	31	29	91
		Expected Count	28.6	28.3	34.0	91.0
	Subadult male	Count	2	2	3	7
		Expected Count	2.2	2.2	2.6	7.0
	Subadult female	Count	5	2	2	9
		Expected Count	2.8	2.8	3.4	9.0
	Subadult unknown	Count	51	71	61	183
		Expected Count	57.6	56.9	68.5	183.0
	Juvenile	Count	71	59	77	207
		Expected Count	65.1	64.4	77.4	207.0
	Infant	Count	100	59	137	296
		Expected Count	93.1	92.1	110.7	296.0
	Unknown	Count	2	34	3	39
		Expected Count	12.3	12.1	14.6	39.0
Total		Count	270	267	321	858
		Expected Count	270.0	267.0	321.0	858.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	85.737 <sup>a</sup>	14	.000
Likelihood Ratio	82.788	14	.000
Linear-by-Linear Association	1.650	1	.199
N of Valid Cases	858		

a. 6 cells (25.0%) have expected count less than 5. The minimum expected count is 2.18.

Table 58 Crosstabulation of age sex category by time of day for Ingestion behaviour, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories for FDF

**Age Sex Group \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
Age Sex Group	Adult male	Count	29	20	63	112
		Expected Count	35.8	19.4	56.8	112.0
	Ault Female	Count	105	41	164	310
		Expected Count	99.0	53.8	157.1	310.0
	Subadult male	Count	3	5	8	16
		Expected Count	5.1	2.8	8.1	16.0
	Subadult female	Count	5	0	20	25
		Expected Count	8.0	4.3	12.7	25.0
	Subadult unknown	Count	155	89	251	495
		Expected Count	158.1	85.9	250.9	495.0
	Juvenile	Count	64	29	72	165

	Expected Count	52.7	28.6	83.6	165.0
Infant	Count	24	17	35	76
	Expected Count	24.3	13.2	38.5	76.0
Unknown	Count	7	12	9	28
	Expected Count	8.9	4.9	14.2	28.0
Total	Count	392	213	622	1227
	Expected Count	392.0	213.0	622.0	1227.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	36.486 <sup>a</sup>	14	.001
Likelihood Ratio	37.586	14	.001
Linear-by-Linear Association	3.269	1	.071
N of Valid Cases	1227		

a. 3 cells (12.5%) have expected count less than 5. The minimum expected count is 2.78.

Table 59 Crosstabulation of age sex category by time of day for Rest behaviour, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories for FDF  
**Age Sex Group \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
Age Sex Group	Adult male	Count	155	244	202	601
		Expected Count	181.3	204.2	215.5	601.0
	Ault Female	Count	497	456	515	1468
		Expected Count	442.9	498.7	526.4	1468.0
	Subadult male	Count	32	35	37	104
		Expected Count	31.4	35.3	37.3	104.0
	Subadult female	Count	43	72	44	159
		Expected Count	48.0	54.0	57.0	159.0
	Subadult unknown	Count	588	694	744	2026
		Expected Count	611.2	688.2	726.5	2026.0
	Juvenile	Count	214	262	293	769
		Expected Count	232.0	261.2	275.8	769.0
	Infant	Count	189	138	211	538
		Expected Count	162.3	182.8	192.9	538.0
	Unknown	Count	37	75	40	152
		Expected Count	45.9	51.6	54.5	152.0
Total	Count	1755	1976	2086	5817	
	Expected Count	1755.0	1976.0	2086.0	5817.0	

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	69.467 <sup>a</sup>	14	.000
Likelihood Ratio	68.766	14	.000



Linear-by-Linear Association	1.575	1	.209
N of Valid Cases	5817		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 31.38.

Table 60 Crosstabulation of age sex category by time of day for Travel behaviour, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories for FDF  
**Age Sex Group \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
Age Sex Group	Adult male	Count	70	63	66	199
		Expected Count	71.2	49.3	78.5	199.0
	Ault Female	Count	207	117	198	522
		Expected Count	186.9	129.3	205.8	522.0
	Subadult male	Count	8	10	22	40
		Expected Count	14.3	9.9	15.8	40.0
	Subadult female	Count	12	9	30	51
		Expected Count	18.3	12.6	20.1	51.0
	Subadult unknown	Count	428	274	440	1142
		Expected Count	408.8	282.9	450.3	1142.0
	Juvenile	Count	152	116	196	464
		Expected Count	166.1	114.9	183.0	464.0
	Infant	Count	85	38	80	203
		Expected Count	72.7	50.3	80.0	203.0
	Unknown	Count	54	76	87	217
		Expected Count	77.7	53.8	85.6	217.0
Total	Count		1016	703	1119	2838
	Expected Count		1016.0	703.0	1119.0	2838.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	47.849 <sup>a</sup>	14	.000
Likelihood Ratio	47.644	14	.000
Linear-by-Linear Association	3.309	1	.069
N of Valid Cases	2838		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.91.

Table 61 Crosstabulation of age sex category by major behaviour, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories for FDF

**Age Sex Group \* behaviour Crosstabulation**

			behaviour					Total
			Agonistic	Social	Ingestion	Rest	Travel	
Age Sex Group	Adult male	Count	340	26	112	601	199	1278
		Expected Count	108.0	93.5	133.7	633.7	309.2	1278.0

Ault Female	Count	116	91	310	1468	522	2507
	Expected Count	211.8	183.4	262.2	1243.1	606.5	2507.0
Subadult male	Count	9	7	16	104	40	176
	Expected Count	14.9	12.9	18.4	87.3	42.6	176.0
Subadult female	Count	9	9	25	159	51	253
	Expected Count	21.4	18.5	26.5	125.5	61.2	253.0
Subadult unknown	Count	233	183	495	2026	1142	4079
	Expected Count	344.6	298.3	426.6	2022.6	986.8	4079.0
Juvenile	Count	188	207	165	769	464	1793
	Expected Count	151.5	131.1	187.5	889.1	433.8	1793.0
Infant	Count	92	296	76	538	203	1205
	Expected Count	101.8	88.1	126.0	597.5	291.5	1205.0
Unknown	Count	4	39	28	152	217	440
	Expected Count	37.2	32.2	46.0	218.2	106.4	440.0
Total	Count	991	858	1227	5817	2838	11731
	Expected Count	991.0	858.0	1227.0	5817.0	2838.0	11731.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1681.043 <sup>a</sup>	28	.000
Likelihood Ratio	1361.776	28	.000
Linear-by-Linear Association	2.952	1	.086
N of Valid Cases	11731		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.87.

Table 62 Crosstabulation of time of day by major behaviour, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories for FDF

#### Three times of day \* behaviour Crosstabulation

			behaviour					Total
			Agonistic	Social	Ingestion	Rest	Travel	
Three times of day	5-8	Count	313	270	392	1755	1016	3746
		Expected Count	316.5	274.0	391.8	1857.5	906.2	3746.0
	9-14	Count	319	267	213	1976	703	3478
		Expected Count	293.8	254.4	363.8	1724.6	841.4	3478.0
	15-18	Count	359	321	622	2086	1119	4507
		Expected Count	380.7	329.6	471.4	2234.9	1090.3	4507.0
Total	Count	991	858	1227	5817	2838	11731	

**Three times of day \* behaviour Crosstabulation**

			behaviour					Total	
			Agonistic	Social	Ingestion	Rest	Travel		
Three times of day	5-8	Count	313	270	392	1755	1016	3746	
		Expected Count	316.5	274.0	391.8	1857.5	906.2	3746.0	
	9-14	Count	319	267	213	1976	703	3478	
		Expected Count	293.8	254.4	363.8	1724.6	841.4	3478.0	
	15-18	Count	359	321	622	2086	1119	4507	
		Expected Count	380.7	329.6	471.4	2234.9	1090.3	4507.0	
			Count	991	858	1227	5817	2838	11731
			Expected Count	991.0	858.0	1227.0	5817.0	2838.0	11731.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	203.979 <sup>a</sup>	8	.000
Likelihood Ratio	210.071	8	.000
Linear-by-Linear Association	5.454	1	.020
N of Valid Cases	11731		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 254.38.

Table 63 Crosstabulation of age sex category by time of day for Agonistic behaviour, showing observed and expected counts. Data from Resang, OMG, all age sex categories for FDF

**Age Sex Group \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
Age Sex Group	Adult male	Count	51	50	27	128
		Expected Count	44.3	40.6	43.1	128.0
	Ault Female	Count	25	3	28	56
		Expected Count	19.4	17.8	18.9	56.0
	Subadult female	Count	0	0	1	1
		Expected Count	.3	.3	.3	1.0
	Subadult unknown	Count	93	89	111	293
		Expected Count	101.3	93.0	98.7	293.0
	Juvenile	Count	44	46	45	135
		Expected Count	46.7	42.8	45.5	135.0
	Infant	Count	14	11	12	37
		Expected Count	12.8	11.7	12.5	37.0
	Unknown	Count	3	12	0	15
		Expected Count	5.2	4.8	5.1	15.0
Total	Count		230	211	224	665
	Expected Count		230.0	211.0	224.0	665.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	49.474 <sup>a</sup>	12	.000
Likelihood Ratio	58.162	12	.000
Linear-by-Linear Association	2.669	1	.102
N of Valid Cases	665		

a. 4 cells (19.0%) have expected count less than 5. The minimum expected count is .32.

Table 64 Crosstabulation of age sex category by time of day for Social behaviour, showing observed and expected counts. Data from Resang, OMG, all age sex categories for FDF

**Age Sex Group \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
Age Sex Group	Adult male	Count	3	5	0	8
		Expected Count	2.9	2.8	2.4	8.0
	Ault Female	Count	9	7	9	25
		Expected Count	9.0	8.6	7.4	25.0
	Subadult female	Count	1	0	0	1
		Expected Count	.4	.3	.3	1.0
	Subadult unknown	Count	38	42	28	108
		Expected Count	38.9	37.3	31.9	108.0
	Juvenile	Count	33	29	30	92
		Expected Count	33.1	31.8	27.1	92.0
	Infant	Count	32	19	31	82
		Expected Count	29.5	28.3	24.2	82.0
	Unknown	Count	6	15	2	23
		Expected Count	8.3	7.9	6.8	23.0
Total		Count	122	117	100	339
		Expected Count	122.0	117.0	100.0	339.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	23.719 <sup>a</sup>	12	.022
Likelihood Ratio	26.281	12	.010
Linear-by-Linear Association	.185	1	.667
N of Valid Cases	339		

a. 6 cells (28.6%) have expected count less than 5. The minimum expected count is .29.

Table 65 Crosstabulation of age sex category by time of day for Ingestion behaviour, showing observed and expected counts. Data from Resang, OMG, all age sex categories for FDF

**Age Sex Group \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
Age Sex Group	Adult male	Count	10	9	20	39
		Expected Count	14.6	5.5	18.9	39.0

Ault Female	Count	31	10	42	83
	Expected Count	31.1	11.6	40.3	83.0
Subadult unknown	Count	82	25	106	213
	Expected Count	79.8	29.9	103.4	213.0
Juvenile	Count	28	12	41	81
	Expected Count	30.3	11.4	39.3	81.0
Infant	Count	12	3	16	31
	Expected Count	11.6	4.3	15.0	31.0
Unknown	Count	16	8	7	31
	Expected Count	11.6	4.3	15.0	31.0
Total	Count	179	67	232	478
	Expected Count	179.0	67.0	232.0	478.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.834 <sup>a</sup>	10	.138
Likelihood Ratio	15.030	10	.131
Linear-by-Linear Association	2.382	1	.123
N of Valid Cases	478		

a. 2 cells (11.1%) have expected count less than 5. The minimum expected count is 4.35.

Table 66 Crosstabulation of age sex category by time of day for Rest behaviour, showing observed and expected counts. Data from Resang, OMG, all age sex categories for FDF  
**Age Sex Group \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
Age Sex Group	Adult male	Count	71	163	20	254
		Expected Count	78.5	142.0	33.6	254.0
	Ault Female	Count	150	188	71	409
		Expected Count	126.3	228.6	54.0	409.0
	Subadult male	Count	1	0	1	2
		Expected Count	.6	1.1	.3	2.0
	Subadult female	Count	4	0	1	5
		Expected Count	1.5	2.8	.7	5.0
	Subadult unknown	Count	349	573	146	1068
		Expected Count	329.9	597.0	141.1	1068.0
	Juvenile	Count	114	265	50	429
		Expected Count	132.5	239.8	56.7	429.0
	Infant	Count	78	118	45	241
		Expected Count	74.4	134.7	31.8	241.0
	Unknown	Count	63	195	21	279
		Expected Count	86.2	156.0	36.9	279.0
Total		Count	830	1502	355	2687
		Expected Count	830.0	1502.0	355.0	2687.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	75.329 <sup>a</sup>	14	.000
Likelihood Ratio	78.389	14	.000
Linear-by-Linear Association	2.063	1	.151
N of Valid Cases	2687		

a. 6 cells (25.0%) have expected count less than 5. The minimum expected count is .26.

Table 67 Crosstabulation of age sex category by time of day for Travel behaviour, showing observed and expected counts. Data from Resang, OMG, all age sex categories for FDF

**Age Sex Group \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
Age Sex Group	Adult male	Count	48	30	26	104
		Expected Count	51.5	23.3	29.2	104.0
	Ault Female	Count	154	41	83	278
		Expected Count	137.6	62.3	78.1	278.0
	Subadult male	Count	3	0	0	3
		Expected Count	1.5	.7	.8	3.0
	Subadult female	Count	2	1	3	6
		Expected Count	3.0	1.3	1.7	6.0
	Subadult unknown	Count	406	149	202	757
		Expected Count	374.8	169.6	212.6	757.0
	Juvenile	Count	164	65	98	327
		Expected Count	161.9	73.3	91.8	327.0
	Infant	Count	42	19	31	92
		Expected Count	45.5	20.6	25.8	92.0
	Unknown	Count	87	105	71	263
		Expected Count	130.2	58.9	73.9	263.0
Total		Count	906	410	514	1830
		Expected Count	906.0	410.0	514.0	1830.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	75.453 <sup>a</sup>	14	.000
Likelihood Ratio	72.333	14	.000
Linear-by-Linear Association	5.996	1	.014
N of Valid Cases	1830		

a. 6 cells (25.0%) have expected count less than 5. The minimum expected count is .67.

Table 68 Crosstabulation of age sex category by major behaviour, showing observed and expected counts. Data from Resang, OMG, all age sex categories for FDF

**Age Sex Group \* behaviour Crosstabulation**

	behaviour	Total
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			Agonistic	Social	Ingestion	Rest	Travel	
Age Sex Group	Adult male	Count	128	8	39	254	104	533
		Expected Count	59.1	30.1	42.5	238.7	162.6	533.0
	Ault Female	Count	56	25	83	409	278	851
		Expected Count	94.3	48.1	67.8	381.2	259.6	851.0
	Subadult male	Count	0	0	0	2	3	5
		Expected Count	.6	.3	.4	2.2	1.5	5.0
	Subadult female	Count	1	1	0	5	6	13
		Expected Count	1.4	.7	1.0	5.8	4.0	13.0
	Subadult unknown	Count	293	108	213	1068	757	2439
		Expected Count	270.4	137.8	194.3	1092.4	744.0	2439.0
	Juvenile	Count	135	92	81	429	327	1064
		Expected Count	117.9	60.1	84.8	476.6	324.6	1064.0
	Infant	Count	37	82	31	241	92	483
		Expected Count	53.5	27.3	38.5	216.3	147.3	483.0
	Unknown	Count	15	23	31	279	263	611
		Expected Count	67.7	34.5	48.7	273.7	186.4	611.0
Total		Count	665	339	478	2687	1830	5999
		Expected Count	665.0	339.0	478.0	2687.0	1830.0	5999.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	415.464 <sup>a</sup>	28	.000
Likelihood Ratio	392.011	28	.000
Linear-by-Linear Association	13.673	1	.000
N of Valid Cases	5999		

a. 9 cells (22.5%) have expected count less than 5. The minimum expected count is .28.

Table 69 Crosstabulation of time of day by major behaviour, showing observed and expected counts. Data from Resang, OMG, all age sex categories for FDF

#### Three times of day \* behaviour Crosstabulation

			behaviour					Total
			Agonistic	Social	Ingestion	Rest	Travel	
Three times of day	5-8	Count	230	122	179	830	906	2267
		Expected Count	251.3	128.1	180.6	1015.4	691.6	2267.0
	9-14	Count	211	117	67	1502	410	2307
		Expected Count	255.7	130.4	183.8	1033.3	703.8	2307.0
	15-18	Count	224	100	232	355	514	1425

	Expected Count	158.0	80.5	113.5	638.3	434.7	1425.0
Total	Count	665	339	478	2687	1830	5999
	Expected Count	665.0	339.0	478.0	2687.0	1830.0	5999.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	817.174 <sup>a</sup>	8	.000
Likelihood Ratio	824.744	8	.000
Linear-by-Linear Association	70.240	1	.000
N of Valid Cases	5999		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 80.53.

Table 70 Crosstabulation of age sex category by time of day for Agonistic behaviour, showing observed and expected counts. Data from Tenagang Besar, OMG, all age sex categories for FDF

#### Age Sex Group \* Three times of day Crosstabulation

			Three times of day			Total
			5-8	9-14	15-18	
Age Sex Group	Adult male	Count	36	27	36	99
		Expected Count	39.0	27.5	32.5	99.0
	Ault Female	Count	25	13	16	54
		Expected Count	21.3	15.0	17.7	54.0
	Subadult female	Count	1	0	0	1
		Expected Count	.4	.3	.3	1.0
	Subadult unknown	Count	56	38	48	142
		Expected Count	56.0	39.4	46.6	142.0
	Juvenile	Count	28	25	25	78
		Expected Count	30.7	21.6	25.6	78.0
	Infant	Count	13	4	10	27
		Expected Count	10.6	7.5	8.9	27.0
	Unknown	Count	3	7	0	10
		Expected Count	3.9	2.8	3.3	10.0
Total	Count	162	114	135	411	
	Expected Count	162.0	114.0	135.0	411.0	

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.344 <sup>a</sup>	12	.176
Likelihood Ratio	18.297	12	.107
Linear-by-Linear Association	.183	1	.669
N of Valid Cases	411		

a. 6 cells (28.6%) have expected count less than 5. The minimum expected count is .28.



Table 71 Crosstabulation of age sex category by time of day for social behaviour, showing observed and expected counts. Data from Tenagang Besar, OMG, all age sex categories for FDF

**Age Sex Group \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
Age Sex Group	Adult male	Count	1	2	1	4
		Expected Count	1.5	1.2	1.4	4.0
	Ault Female	Count	9	12	11	32
		Expected Count	11.6	9.5	10.9	32.0
	Subadult female	Count	0	1	0	1
		Expected Count	.4	.3	.3	1.0
	Subadult unknown	Count	52	50	42	144
		Expected Count	52.3	42.8	49.0	144.0
	Juvenile	Count	57	25	65	147
		Expected Count	53.3	43.6	50.0	147.0
	Infant	Count	54	47	42	143
		Expected Count	51.9	42.5	48.6	143.0
	Unknown	Count	3	7	4	14
		Expected Count	5.1	4.2	4.8	14.0
Total		Count	176	144	165	485
		Expected Count	176.0	144.0	165.0	485.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	23.741 <sup>a</sup>	12	.022
Likelihood Ratio	24.633	12	.017
Linear-by-Linear Association	.178	1	.673
N of Valid Cases	485		

a. 8 cells (38.1%) have expected count less than 5. The minimum expected count is .30.

Table 72 Crosstabulation of age sex category by time of day for Ingestion behaviour, showing observed and expected counts. Data from Tenagang Besar, OMG, all age sex categories for FDF

**Age Sex Group \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
Age Sex Group	Adult male	Count	14	13	16	43
		Expected Count	18.2	9.8	15.1	43.0
	Ault Female	Count	69	57	58	184
		Expected Count	77.7	41.8	64.5	184.0
	Subadult male	Count	3	0	0	3
		Expected Count	1.3	.7	1.1	3.0
	Subadult female	Count	3	1	3	7
		Expected Count	3.0	1.6	2.5	7.0
	Subadult unknown	Count	152	61	118	331
		Expected Count	139.7	75.3	116.0	331.0

Juvenile	Count	50	27	55	132
	Expected Count	55.7	30.0	46.3	132.0
Infant	Count	24	12	24	60
	Expected Count	25.3	13.6	21.0	60.0
Unknown	Count	21	10	5	36
	Expected Count	15.2	8.2	12.6	36.0
Total	Count	336	181	279	796
	Expected Count	336.0	181.0	279.0	796.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27.893 <sup>a</sup>	14	.015
Likelihood Ratio	29.665	14	.008
Linear-by-Linear Association	.687	1	.407
N of Valid Cases	796		

a. 6 cells (25.0%) have expected count less than 5. The minimum expected count is .68.

Table 73 Crosstabulation of age sex category by time of day for Rest behaviour, showing observed and expected counts. Data from Tenagang Besar, OMG, all age sex categories for FDF  
**Age Sex Group \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
Age Sex Group	Adult male	Count	61	94	69	224
		Expected Count	45.3	120.5	58.2	224.0
	Ault Female	Count	170	382	213	765
		Expected Count	154.7	411.4	198.9	765.0
	Subadult male	Count	3	0	5	8
		Expected Count	1.6	4.3	2.1	8.0
	Subadult female	Count	3	11	2	16
		Expected Count	3.2	8.6	4.2	16.0
	Subadult unknown	Count	353	1084	458	1895
		Expected Count	383.3	1019.1	492.6	1895.0
	Juvenile	Count	110	307	169	586
		Expected Count	118.5	315.1	152.3	586.0
	Infant	Count	40	119	79	238
		Expected Count	48.1	128.0	61.9	238.0
	Unknown	Count	52	109	23	184
		Expected Count	37.2	99.0	47.8	184.0
Total		Count	792	2106	1018	3916
		Expected Count	792.0	2106.0	1018.0	3916.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	67.384 <sup>a</sup>	14	.000
Likelihood Ratio	72.417	14	.000

Linear-by-Linear Association	.075	1	.785
N of Valid Cases	3916		

a. 5 cells (20.8%) have expected count less than 5. The minimum expected count is 1.62.

Table 74 Crosstabulation of age sex category by time of day for Travel behaviour, showing observed and expected counts. Data from Tenang Besar, OMG, all age sex categories for FDF  
**Age Sex Group \* Three times of day Crosstabulation**

			Three times of day			Total
			5-8	9-14	15-18	
Age Sex Group	Adult male	Count	41	16	37	94
		Expected Count	39.3	18.6	36.1	94.0
	Ault Female	Count	108	48	89	245
		Expected Count	102.5	48.5	94.0	245.0
	Subadult male	Count	1	0	3	4
		Expected Count	1.7	.8	1.5	4.0
	Subadult female	Count	2	5	2	9
		Expected Count	3.8	1.8	3.5	9.0
	Subadult unknown	Count	271	119	257	647
		Expected Count	270.8	128.1	248.2	647.0
	Juvenile	Count	115	57	92	264
		Expected Count	110.5	52.3	101.3	264.0
	Infant	Count	30	13	39	82
		Expected Count	34.3	16.2	31.5	82.0
	Unknown	Count	43	31	41	115
		Expected Count	48.1	22.8	44.1	115.0
Total		Count	611	289	560	1460
		Expected Count	611.0	289.0	560.0	1460.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.900 <sup>a</sup>	14	.133
Likelihood Ratio	18.483	14	.186
Linear-by-Linear Association	.492	1	.483
N of Valid Cases	1460		

a. 6 cells (25.0%) have expected count less than 5. The minimum expected count is .79.

Table 75 Crosstabulation of age sex category by major behaviour, showing observed and expected counts. Data from Tenang Besar, OMG, all age sex categories for FDF

**Age Sex Group \* behaviour Crosstabulation**

			behaviour					Total
			Agonistic	Social	Ingestion	Rest	Travel	
Age Sex Group	Adult male	Count	99	4	43	224	94	464
		Expected Count	27.0	31.8	52.3	257.1	95.8	464.0

Ault Female	Count	54	32	184	765	245	1280
	Expected Count	74.4	87.8	144.2	709.2	264.4	1280.0
Subadult male	Count	0	0	3	8	4	15
	Expected Count	.9	1.0	1.7	8.3	3.1	15.0
Subadult female	Count	1	1	7	16	9	34
	Expected Count	2.0	2.3	3.8	18.8	7.0	34.0
Subadult unknown	Count	142	144	331	1895	647	3159
	Expected Count	183.7	216.8	355.8	1750.2	652.5	3159.0
Juvenile	Count	78	147	132	586	264	1207
	Expected Count	70.2	82.8	135.9	668.7	249.3	1207.0
Infant	Count	27	143	60	238	82	550
	Expected Count	32.0	37.7	61.9	304.7	113.6	550.0
Unknown	Count	10	14	36	184	115	359
	Expected Count	20.9	24.6	40.4	198.9	74.2	359.0
Total	Count	411	485	796	3916	1460	7068
	Expected Count	411.0	485.0	796.0	3916.0	1460.0	7068.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	750.100 <sup>a</sup>	28	.000
Likelihood Ratio	571.846	28	.000
Linear-by-Linear Association	1.876	1	.171
N of Valid Cases	7068		

a. 7 cells (17.5%) have expected count less than 5. The minimum expected count is .87.

Table 76 Crosstabulation of time of day by major behaviour, showing observed and expected counts. Data from Tenagang Besar, OMG, all age sex categories for FDF

#### Three times of day \* behaviour Crosstabulation

			behaviour					Total
			Agonistic	Social	Ingestion	Rest	Travel	
Three times of day	5-8	Count	162	176	336	792	611	2077
		Expected Count	120.8	142.5	233.9	1150.8	429.0	2077.0
	9-14	Count	114	144	181	2106	289	2834
		Expected Count	164.8	194.5	319.2	1570.2	585.4	2834.0
	15-18	Count	135	165	279	1018	560	2157
		Expected Count	125.4	148.0	242.9	1195.1	445.6	2157.0
Total	Count	411	485	796	3916	1460	7068	

**Three times of day \* behaviour Crosstabulation**

			behaviour					Total
			Agonistic	Social	Ingestion	Rest	Travel	
Three times of day	5-8	Count	162	176	336	792	611	2077
		Expected Count	120.8	142.5	233.9	1150.8	429.0	2077.0
	9-14	Count	114	144	181	2106	289	2834
		Expected Count	164.8	194.5	319.2	1570.2	585.4	2834.0
	15-18	Count	135	165	279	1018	560	2157
		Expected Count	125.4	148.0	242.9	1195.1	445.6	2157.0
		Count	411	485	796	3916	1460	7068
		Expected Count	411.0	485.0	796.0	3916.0	1460.0	7068.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	740.678 <sup>a</sup>	8	.000
Likelihood Ratio	768.336	8	.000
Linear-by-Linear Association	7.562	1	.006
N of Valid Cases	7068		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 120.78.

Table 77 Crosstabulation of number of boats by major behaviour, showing observed and expected counts. Data from Menanggul, all age sex categories, all times of day for FDF

**NumBoat \* behaviour Crosstabulation**

			behaviour					Total
			Agonistic	Social	Ingestion	Rest	Travel	
NumBoat .00	Count	6	3	16	31	4	60	
	Expected Count	5.9	4.0	7.2	26.9	15.9	60.0	
1.00	Count	125	78	157	550	453	1363	
	Expected Count	133.5	91.5	164.4	611.7	361.9	1363.0	
2.00	Count	25	24	43	364	112	568	
	Expected Count	55.6	38.1	68.5	254.9	150.8	568.0	
3.00	Count	119	118	62	350	322	971	
	Expected Count	95.1	65.2	117.1	435.8	257.8	971.0	
4.00	Count	38	38	63	244	107	490	
	Expected Count	48.0	32.9	59.1	219.9	130.1	490.0	
5.00	Count	63	45	122	297	271	798	
	Expected Count	78.2	53.6	96.2	358.1	211.9	798.0	
6.00	Count	50	29	32	262	130	503	
	Expected Count	49.3	33.8	60.7	225.7	133.6	503.0	
7.00	Count	18	16	14	182	40	270	
	Expected Count	26.4	18.1	32.6	121.2	71.7	270.0	
8.00	Count	73	66	150	536	248	1073	

	Expected Count	105.1	72.0	129.4	481.6	284.9	1073.0
9.00	Count	34	33	43	106	44	260
	Expected Count	25.5	17.5	31.4	116.7	69.0	260.0
10.00	Count	115	18	60	96	74	363
	Expected Count	35.6	24.4	43.8	162.9	96.4	363.0
11.00	Count	22	6	34	91	66	219
	Expected Count	21.4	14.7	26.4	98.3	58.2	219.0
12.00	Count	22	15	102	176	105	420
	Expected Count	41.1	28.2	50.7	188.5	111.5	420.0
13.00	Count	10	6	3	31	27	77
	Expected Count	7.5	5.2	9.3	34.6	20.4	77.0
15.00	Count	19	19	26	130	33	227
	Expected Count	22.2	15.2	27.4	101.9	60.3	227.0
16.00	Count	23	8	6	19	34	90
	Expected Count	8.8	6.0	10.9	40.4	23.9	90.0
17.00	Count	7	5	14	59	15	100
	Expected Count	9.8	6.7	12.1	44.9	26.6	100.0
Total	Count	769	527	947	3524	2085	7852
	Expected Count	769.0	527.0	947.0	3524.0	2085.0	7852.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	806.797 <sup>a</sup>	64	.000
Likelihood Ratio	738.029	64	.000
Linear-by-Linear Association	32.955	1	.000
N of Valid Cases	7852		

a. 1 cells (1.2%) have expected count less than 5. The minimum expected count is 4.03.

Table 78 Crosstabulation of number of boats by major behaviour, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories, mornings for FDF

#### Number of Boats \* behaviour Crosstabulation

		behaviour					Total
		Agonistic	Social	Ingestion	Rest	Travel	
Number of Boats .00	Count	6	3	16	31	4	60
	Expected Count	4.7	3.2	6.5	27.2	18.4	60.0
1.00	Count	75	41	124	447	313	1000
	Expected Count	78.2	54.1	108.2	452.9	306.5	1000.0
2.00	Count	20	22	43	221	110	416
	Expected Count	32.5	22.5	45.0	188.4	127.5	416.0
3.00	Count	64	44	31	207	217	563
	Expected Count	44.0	30.5	60.9	255.0	172.6	563.0
4.00	Count	2	0	3	9	9	23
	Expected Count	1.8	1.2	2.5	10.4	7.0	23.0
5.00	Count	2	1	2	48	6	59

	Expected Count	4.6	3.2	6.4	26.7	18.1	59.0
6.00	Count	3	8	19	33	15	78
	Expected Count	6.1	4.2	8.4	35.3	23.9	78.0
Total	Count	172	119	238	996	674	2199
	Expected Count	172.0	119.0	238.0	996.0	674.0	2199.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	149.893 <sup>a</sup>	24	.000
Likelihood Ratio	152.575	24	.000
Linear-by-Linear Association	.123	1	.726
N of Valid Cases	2199		

a. 8 cells (22.9%) have expected count less than 5. The minimum expected count is 1.24.

Table 79 Crosstabulation of number of boats by major behaviour, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories, evenings for FDF

#### Number of Boats \* behaviour Crosstabulation

		behaviour					Total
		Agonistic	Social	Ingestion	Rest	Travel	
Number of Boats 1.00	Count	22	17	32	39	112	222
	Expected Count	18.4	15.9	30.9	102.4	54.5	222.0
3.00	Count	6	23	12	43	6	90
	Expected Count	7.4	6.5	12.5	41.5	22.1	90.0
4.00	Count	9	27	47	158	64	305
	Expected Count	25.2	21.9	42.4	140.6	74.8	305.0
5.00	Count	51	40	97	234	180	602
	Expected Count	49.8	43.2	83.7	277.6	147.7	602.0
6.00	Count	34	16	7	172	65	294
	Expected Count	24.3	21.1	40.9	135.6	72.1	294.0
7.00	Count	18	16	14	182	40	270
	Expected Count	22.3	19.4	37.5	124.5	66.3	270.0
8.00	Count	70	62	150	489	228	999
	Expected Count	82.6	71.7	138.9	460.6	245.1	999.0
9.00	Count	34	33	43	106	44	260
	Expected Count	21.5	18.7	36.2	119.9	63.8	260.0
10.00	Count	7	14	9	45	31	106
	Expected Count	8.8	7.6	14.7	48.9	26.0	106.0
11.00	Count	22	6	33	90	66	217

	Expected Count	18.0	15.6	30.2	100.1	53.2	217.0
12.00	Count	22	15	102	176	105	420
	Expected Count	34.7	30.1	58.4	193.7	103.1	420.0
13.00	Count	10	6	3	31	27	77
	Expected Count	6.4	5.5	10.7	35.5	18.9	77.0
15.00	Count	19	19	26	130	33	227
	Expected Count	18.8	16.3	31.6	104.7	55.7	227.0
16.00	Count	23	8	6	19	34	90
	Expected Count	7.4	6.5	12.5	41.5	22.1	90.0
17.00	Count	7	5	14	59	15	100
	Expected Count	8.3	7.2	13.9	46.1	24.5	100.0
Total	Count	354	307	595	1973	1050	4279
	Expected Count	354.0	307.0	595.0	1973.0	1050.0	4279.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	476.999 <sup>a</sup>	56	.000
Likelihood Ratio	472.384	56	.000
Linear-by-Linear Association	2.638	1	.104
N of Valid Cases	4279		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.52.

Table 80 Crosstabulation of boat presence or absence by major behaviour, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories, mornings for FDF

#### Boat presence \* behaviour Crosstabulation

		behaviour					Total
		Agonistic	Social	Ingestion	Rest	Travel	
Boat presence .00	Count	151	158	181	829	389	1708
	Expected Count	142.7	123.1	178.7	800.2	463.2	1708.0
1.00	Count	75	41	121	441	298	976
	Expected Count	81.6	70.3	102.1	457.3	264.7	976.0
2.00	Count	16	18	35	188	82	339
	Expected Count	28.3	24.4	35.5	158.8	91.9	339.0
3.00	Count	64	44	31	207	217	563
	Expected Count	47.0	40.6	58.9	263.8	152.7	563.0
4.00	Count	2	0	3	9	9	23
	Expected Count	1.9	1.7	2.4	10.8	6.2	23.0
5.00	Count	2	1	2	48	6	59
	Expected Count	4.9	4.3	6.2	27.6	16.0	59.0
6.00	Count	3	8	19	33	15	78
	Expected Count	6.5	5.6	8.2	36.5	21.2	78.0



Total	Count	313	270	392	1755	1016	3746
	Expected Count	313.0	270.0	392.0	1755.0	1016.0	3746.0

### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	167.825 <sup>a</sup>	24	.000
Likelihood Ratio	170.461	24	.000
Linear-by-Linear Association	7.097	1	.008
N of Valid Cases	3746		

a. 5 cells (14.3%) have expected count less than 5. The minimum expected count is 1.66.

Table 81 Crosstabulation of boat presence or absence by major behaviour, showing observed and expected counts. Data from Menanggul, OMG, all age sex categories, evenings for FDF

### Boat presence \* behaviour Crosstabulation

		behaviour					Total
		Agonistic	Social	Ingestion	Rest	Travel	
Boat presence .00	Count	5	14	27	113	69	228
	Expected Count	18.2	16.2	31.5	105.5	56.6	228.0
1.00	Count	22	17	32	39	112	222
	Expected Count	17.7	15.8	30.6	102.7	55.1	222.0
3.00	Count	6	23	12	43	6	90
	Expected Count	7.2	6.4	12.4	41.7	22.3	90.0
4.00	Count	9	27	47	158	64	305
	Expected Count	24.3	21.7	42.1	141.2	75.7	305.0
5.00	Count	51	40	97	234	180	602
	Expected Count	48.0	42.9	83.1	278.6	149.5	602.0
6.00	Count	34	16	7	172	65	294
	Expected Count	23.4	20.9	40.6	136.1	73.0	294.0
7.00	Count	18	16	14	182	40	270
	Expected Count	21.5	19.2	37.3	125.0	67.0	270.0
8.00	Count	70	62	150	489	228	999
	Expected Count	79.6	71.2	137.9	462.4	248.0	999.0
9.00	Count	34	33	43	106	44	260
	Expected Count	20.7	18.5	35.9	120.3	64.6	260.0
10.00	Count	7	14	9	45	31	106
	Expected Count	8.4	7.5	14.6	49.1	26.3	106.0
11.00	Count	22	6	33	90	66	217
	Expected Count	17.3	15.5	29.9	100.4	53.9	217.0
12.00	Count	22	15	102	176	105	420
	Expected Count	33.5	29.9	58.0	194.4	104.3	420.0
13.00	Count	10	6	3	31	27	77
	Expected Count	6.1	5.5	10.6	35.6	19.1	77.0
15.00	Count	19	19	26	130	33	227
	Expected Count	18.1	16.2	31.3	105.1	56.4	227.0
16.00	Count	23	8	6	19	34	90
	Expected Count	7.2	6.4	12.4	41.7	22.3	90.0

17.00	Count	7	5	14	59	15	100
	Expected Count	8.0	7.1	13.8	46.3	24.8	100.0
Total	Count	359	321	622	2086	1119	4507
	Expected Count	359.0	321.0	622.0	2086.0	1119.0	4507.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	493.377 <sup>a</sup>	60	.000
Likelihood Ratio	490.574	60	.000
Linear-by-Linear Association	8.836	1	.003
N of Valid Cases	4507		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.48.

Table 82 Crosstabulation of number of boats by major behaviour, showing observed and expected counts. Data from Resang, all age sex categories, all times of day for FDF

**NumBoat \* behaviour Crosstabulation**

		behaviour					Total
		Agonistic	Social	Ingestion	Rest	Travel	
NumBoat .00	Count	49	27	40	352	117	585
	Expected Count	62.9	43.1	38.3	295.1	145.6	585.0
1.00	Count	73	55	32	112	176	448
	Expected Count	48.2	33.0	29.4	226.0	111.5	448.0
2.00	Count	19	15	17	106	41	198
	Expected Count	21.3	14.6	13.0	99.9	49.3	198.0
3.00	Count	5	3	0	115	4	127
	Expected Count	13.7	9.4	8.3	64.1	31.6	127.0
Total	Count	146	100	89	685	338	1358
	Expected Count	146.0	100.0	89.0	685.0	338.0	1358.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	234.275 <sup>a</sup>	12	.000
Likelihood Ratio	256.966	12	.000
Linear-by-Linear Association	.021	1	.886
N of Valid Cases	1358		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.32.

Table 83 Crosstabulation of number of boats by major behaviour, showing observed and expected counts. Data from Resang, OMG, all age sex categories, mornings for FDF

**Number of Boats \* behaviour Crosstabulation**

		behaviour					Total
		Agonistic	Social	Ingestion	Rest	Travel	
Number of Boats .00	Count	4	1	0	21	22	48
	Expected Count	5.2	3.8	2.1	20.1	16.8	48.0

1.00	Count	27	20	13	77	111	248
	Expected Count	26.8	19.7	10.9	103.8	86.9	248.0
2.00	Count	18	15	7	92	26	158
	Expected Count	17.1	12.5	7.0	66.1	55.3	158.0
Total	Count	49	36	20	190	159	454
	Expected Count	49.0	36.0	20.0	190.0	159.0	454.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	46.343 <sup>a</sup>	8	.000
Likelihood Ratio	52.023	8	.000
Linear-by-Linear Association	8.002	1	.005
N of Valid Cases	454		

a. 2 cells (13.3%) have expected count less than 5. The minimum expected count is 2.11.

Table 84 Crosstabulation of number of boats by major behaviour, showing observed and expected counts. Data from Resang, OMG, all age sex categories, evenings for FDF

#### Number of Boats \* behaviour Crosstabulation

		behaviour					Total
		Agonistic	Social	Ingestion	Rest	Travel	
Number of Boats .00	Count	18	8	24	87	42	179
	Expected Count	30.2	20.3	20.3	57.6	50.5	179.0
1.00	Count	46	35	19	35	65	200
	Expected Count	33.8	22.7	22.7	64.4	56.5	200.0
Total	Count	64	43	43	122	107	379
	Expected Count	64.0	43.0	43.0	122.0	107.0	379.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	55.901 <sup>a</sup>	4	.000
Likelihood Ratio	58.257	4	.000
Linear-by-Linear Association	14.764	1	.000
N of Valid Cases	379		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 20.31.

Table 85 Crosstabulation of boat presence or absence by major behaviour, showing observed and expected counts. Data from Resang, OMG, all age sex categories, mornings for FDF

#### Boat presence \* behaviour Crosstabulation

		behaviour					Total
		Agonistic	Social	Ingestion	Rest	Travel	
Boat presence .00	Count	185	87	159	661	769	1861

	Expected Count	188.8	100.2	146.9	681.4	743.7	1861.0
1.00	Count	27	20	13	77	111	248
	Expected Count	25.2	13.3	19.6	90.8	99.1	248.0
2.00	Count	18	15	7	92	26	158
	Expected Count	16.0	8.5	12.5	57.8	63.1	158.0
Total	Count	230	122	179	830	906	2267
	Expected Count	230.0	122.0	179.0	830.0	906.0	2267.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	63.069 <sup>a</sup>	8	.000
Likelihood Ratio	65.755	8	.000
Linear-by-Linear Association	5.621	1	.018
N of Valid Cases	2267		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.50.

Table 86 Crosstabulation of boat presence or absence by major behaviour, showing observed and expected counts. Data from Resang, OMG, all age sex categories, evenings for FDF

#### Boat presence \* behaviour Crosstabulation

		behaviour					Total
		Agonistic	Social	Ingestion	Rest	Travel	
Boat presence .00	Count	178	65	213	320	449	1225
	Expected Count	192.6	86.0	199.4	305.2	441.9	1225.0
1.00	Count	46	35	19	35	65	200
	Expected Count	31.4	14.0	32.6	49.8	72.1	200.0
Total	Count	224	100	232	355	514	1425
	Expected Count	224.0	100.0	232.0	355.0	514.0	1425.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	56.798 <sup>a</sup>	4	.000
Likelihood Ratio	48.684	4	.000
Linear-by-Linear Association	16.581	1	.000
N of Valid Cases	1425		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 14.04.

Table 87 Crosstabulation of number of boats by major behaviour, showing observed and expected counts. Data from Tenagang Besar, all age sex categories, all times of day for FDF

#### NumBoat \* behaviour Crosstabulation

		behaviour					Total
		Agonistic	Social	Ingestion	Rest	Travel	
NumBoat 1.00	Count	64	32	93	522	248	959
	Expected Count	58.5	69.5	186.0	402.8	242.1	959.0
2.00	Count	29	73	203	220	141	666
	Expected Count	40.7	48.2	129.2	279.8	168.1	666.0

3.00	Count	18	34	61	50	33	196
	Expected Count	12.0	14.2	38.0	82.3	49.5	196.0
4.00	Count	7	1	18	20	66	112
	Expected Count	6.8	8.1	21.7	47.0	28.3	112.0
Total	Count	118	140	375	812	488	1933
	Expected Count	118.0	140.0	375.0	812.0	488.0	1933.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	313.487 <sup>a</sup>	12	.000
Likelihood Ratio	306.421	12	.000
Linear-by-Linear Association	31.680	1	.000
N of Valid Cases	1933		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.84.

Table 88 Crosstabulation of number of boats by major behaviour, showing observed and expected counts. Data from Tenagang Besar, OMG, all age sex categories, mornings for FDF

#### Number of Boats \* behaviour Crosstabulation

		behaviour					Total
		Agonistic	Social	Ingestion	Rest	Travel	
Number of Boats 1.00	Count	7	5	21	59	42	134
	Expected Count	7.9	10.8	38.0	51.2	26.1	134.0
2.00	Count	11	9	85	102	32	239
	Expected Count	14.1	19.2	67.9	91.3	46.5	239.0
3.00	Count	15	31	51	48	27	172
	Expected Count	10.1	13.8	48.8	65.7	33.5	172.0
4.00	Count	0	0	2	5	8	15
	Expected Count	.9	1.2	4.3	5.7	2.9	15.0
Total	Count	33	45	159	214	109	560
	Expected Count	33.0	45.0	159.0	214.0	109.0	560.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	79.973 <sup>a</sup>	12	.000
Likelihood Ratio	76.427	12	.000
Linear-by-Linear Association	18.174	1	.000
N of Valid Cases	560		

a. 4 cells (20.0%) have expected count less than 5. The minimum expected count is .88.

Table 89 Crosstabulation of number of boats by major behaviour, showing observed and expected counts. Data from Tenagang Besar, OMG, all age sex categories, evenings for FDF

#### Number of Boats \* behaviour Crosstabulation

		behaviour					Total
		Agonistic	Social	Ingestion	Rest	Travel	
Number of Boats 1.00	Count	37	18	39	170	113	377
	Expected Count	33.3	30.4	46.3	150.5	116.5	377.0
2.00	Count	6	21	15	36	42	120
	Expected Count	10.6	9.7	14.7	47.9	37.1	120.0
3.00	Count	3	3	10	2	6	24
	Expected Count	2.1	1.9	2.9	9.6	7.4	24.0
Total	Count	46	42	64	208	161	521
	Expected Count	46.0	42.0	64.0	208.0	161.0	521.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	52.210 <sup>a</sup>	8	.000
Likelihood Ratio	46.549	8	.000
Linear-by-Linear Association	8.890	1	.003
N of Valid Cases	521		

a. 3 cells (20.0%) have expected count less than 5. The minimum expected count is 1.93.

Table 90 Crosstabulation of boat presence or absence by major behaviour, showing observed and expected counts. Data from Tenagang Besar, OMG, all age sex categories, mornings for FDF

#### Boat presence \* behaviour Crosstabulation

		behaviour					Total
		Agonistic	Social	Ingestion	Rest	Travel	
Boat presence .00	Count	129	131	177	578	502	1517
	Expected Count	118.3	128.5	245.4	578.5	446.3	1517.0
1.00	Count	7	5	21	59	42	134
	Expected Count	10.5	11.4	21.7	51.1	39.4	134.0
2.00	Count	11	9	85	102	32	239
	Expected Count	18.6	20.3	38.7	91.1	70.3	239.0
3.00	Count	15	31	51	48	27	172
	Expected Count	13.4	14.6	27.8	65.6	50.6	172.0
4.00	Count	0	0	2	5	8	15
	Expected Count	1.2	1.3	2.4	5.7	4.4	15.0
Total	Count	162	176	336	792	611	2077
	Expected Count	162.0	176.0	336.0	792.0	611.0	2077.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	179.479 <sup>a</sup>	16	.000
Likelihood Ratio	171.732	16	.000
Linear-by-Linear Association	36.034	1	.000

N of Valid Cases	2077
------------------	------

a. 4 cells (16.0%) have expected count less than 5. The minimum expected count is 1.17.

Table 91 Crosstabulation of boat presence or absence by major behaviour, showing observed and expected counts. Data from Tenagang Besar, OMG, all age sex categories, evenings for FDF

**Boat presence \* behaviour Crosstabulation**

		behaviour					Total
		Agonistic	Social	Ingestion	Rest	Travel	
Boat presence .00	Count	89	123	215	810	399	1636
	Expected Count	102.4	125.1	211.6	772.1	424.7	1636.0
1.00	Count	37	18	39	170	113	377
	Expected Count	23.6	28.8	48.8	177.9	97.9	377.0
2.00	Count	6	21	15	36	42	120
	Expected Count	7.5	9.2	15.5	56.6	31.2	120.0
3.00	Count	3	3	10	2	6	24
	Expected Count	1.5	1.8	3.1	11.3	6.2	24.0
Total	Count	135	165	279	1018	560	2157
	Expected Count	135.0	165.0	279.0	1018.0	560.0	2157.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	73.670 <sup>a</sup>	12	.000
Likelihood Ratio	67.830	12	.000
Linear-by-Linear Association	4.730	1	.030
N of Valid Cases	2157		

a. 3 cells (15.0%) have expected count less than 5. The minimum expected count is 1.50.

Table 92 Multivariate General Linear Final Model for Adult Category containing 4 sections A factors, B Multivariate Tests C Tests of Between-Subjects Effects, D Parameter Estimates

**Warnings**

The following factors or covariates are not used in the model: meanml, meanyl, fruitcombine, NumBoat, people

**Between-Subjects Factors**

		Value Label	N
River	Menanggul		52
	Resang		36
	Tenagang Besar		42
threetimes	15-18		43
	5-8		51
	9-14		36
Season	flooding		41
	normal		89
sex	1	Male	64
	2	Female	66

Multivariate Tests<sup>c</sup>

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.786	109.490 <sup>a</sup>	4.000	119.000	.000
	Wilks' Lambda	.214	109.490 <sup>a</sup>	4.000	119.000	.000
	Hotelling's Trace	3.680	109.490 <sup>a</sup>	4.000	119.000	.000
	Roy's Largest Root	3.680	109.490 <sup>a</sup>	4.000	119.000	.000
River	Pillai's Trace	.251	4.314	8.000	240.000	.000
	Wilks' Lambda	.760	4.365 <sup>a</sup>	8.000	238.000	.000
	Hotelling's Trace	.299	4.415	8.000	236.000	.000
	Roy's Largest Root	.232	6.951 <sup>b</sup>	4.000	120.000	.000
threetimes	Pillai's Trace	.133	2.133	8.000	240.000	.034
	Wilks' Lambda	.869	2.165 <sup>a</sup>	8.000	238.000	.031
	Hotelling's Trace	.149	2.196	8.000	236.000	.028
	Roy's Largest Root	.135	4.035 <sup>b</sup>	4.000	120.000	.004
Season	Pillai's Trace	.109	3.650 <sup>a</sup>	4.000	119.000	.008
	Wilks' Lambda	.891	3.650 <sup>a</sup>	4.000	119.000	.008
	Hotelling's Trace	.123	3.650 <sup>a</sup>	4.000	119.000	.008
	Roy's Largest Root	.123	3.650 <sup>a</sup>	4.000	119.000	.008
sex	Pillai's Trace	.352	16.126 <sup>a</sup>	4.000	119.000	.000
	Wilks' Lambda	.648	16.126 <sup>a</sup>	4.000	119.000	.000
	Hotelling's Trace	.542	16.126 <sup>a</sup>	4.000	119.000	.000
	Roy's Largest Root	.542	16.126 <sup>a</sup>	4.000	119.000	.000
flowercombine	Pillai's Trace	.179	6.489 <sup>a</sup>	4.000	119.000	.000
	Wilks' Lambda	.821	6.489 <sup>a</sup>	4.000	119.000	.000
	Hotelling's Trace	.218	6.489 <sup>a</sup>	4.000	119.000	.000
	Roy's Largest Root	.218	6.489 <sup>a</sup>	4.000	119.000	.000

a. Exact statistic

b. The statistic is an upper bound on F that yields a lower bound on the significance level.

c. Design: Intercept + River + threetimes + Season + sex + flowercombine

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	P_Agonistic	18822.157 <sup>a</sup>	7	2688.880	10.407	.000
	P_Ingestion	2772.102 <sup>b</sup>	7	396.015	3.694	.001
	P_Rest	16425.306 <sup>c</sup>	7	2346.472	5.488	.000
	P_Social	143.972 <sup>d</sup>	7	20.567	1.453	.190
	P_Travel	14306.888 <sup>e</sup>	7	2043.841	5.597	.000
Intercept	P_Agonistic	11149.721	1	11149.721	43.155	.000
	P_Ingestion	3507.109	1	3507.109	32.712	.000
	P_Rest	47982.470	1	47982.470	112.233	.000
	P_Social	361.682	1	361.682	25.558	.000
	P_Travel	48405.569	1	48405.569	132.562	.000
River	P_Agonistic	1251.420	2	625.710	2.422	.093
	P_Ingestion	159.147	2	79.574	.742	.478
	P_Rest	7340.001	2	3670.001	8.584	.000
	P_Social	34.127	2	17.063	1.206	.303
	P_Travel	8912.668	2	4456.334	12.204	.000
threetimes	P_Agonistic	150.364	2	75.182	.291	.748
	P_Ingestion	1698.317	2	849.159	7.920	.001
	P_Rest	1390.309	2	695.155	1.626	.201
	P_Social	2.290	2	1.145	.081	.922
	P_Travel	502.196	2	251.098	.688	.505
Season	P_Agonistic	857.880	1	857.880	3.320	.071



	P_Ingestion	965.410	1	965.410	9.005	.003
	P_Rest	192.271	1	192.271	.450	.504
	P_Social	5.836	1	5.836	.412	.522
	P_Travel	1942.927	1	1942.927	5.321	.023
sex	P_Agonistic	16480.056	1	16480.056	63.786	.000
	P_Ingestion	140.372	1	140.372	1.309	.255
	P_Rest	4672.776	1	4672.776	10.930	.001
	P_Social	49.094	1	49.094	3.469	.065
	P_Travel	1694.342	1	1694.342	4.640	.033
flowercombine	P_Agonistic	59.398	1	59.398	.230	.632
	P_Ingestion	1.832	1	1.832	.017	.896
	P_Rest	7072.155	1	7072.155	16.542	.000
	P_Social	43.510	1	43.510	3.075	.082
	P_Travel	4683.929	1	4683.929	12.827	.000
Error	P_Agonistic	31520.687	122	258.366		
	P_Ingestion	13080.013	122	107.213		
	P_Rest	52158.103	122	427.525		
	P_Social	1726.441	122	14.151		
	P_Travel	44548.737	122	365.154		
Total	P_Agonistic	88518.151	130			
	P_Ingestion	30544.129	130			
	P_Rest	339021.339	130			
	P_Social	2501.324	130			
	P_Travel	136376.307	130			
Corrected Total	P_Agonistic	50342.845	129			
	P_Ingestion	15852.116	129			
	P_Rest	68583.409	129			
	P_Social	1870.412	129			
	P_Travel	58855.625	129			

a. R Squared = .374 (Adjusted R Squared = .338)

b. R Squared = .175 (Adjusted R Squared = .128)

c. R Squared = .239 (Adjusted R Squared = .196)

d. R Squared = .077 (Adjusted R Squared = .024)

e. R Squared = .243 (Adjusted R Squared = .200)

#### Parameter Estimates

Dependent Variable	Parameter	B	Std. Error	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
P_Agonistic	Intercept	2.519	4.330	.582	.562	-6.052	11.091
	[River=Menanggul]	6.762	3.451	1.959	.052	-.070	13.594
	[River=Resang]	6.458	3.825	1.688	.094	-1.114	14.030
	[River=Tenagang Besar]	0 <sup>a</sup>	.	.	.	.	.
	[threetimes=15-18]	1.967	3.669	.536	.593	-5.295	9.230
	[threetimes=5-8]	2.676	3.558	.752	.453	-4.367	9.720
	[threetimes=9-14]	0 <sup>a</sup>	.	.	.	.	.
	[Season=flooding]	-5.574	3.059	-1.822	.071	-11.630	.482
	[Season=normal]	0 <sup>a</sup>	.	.	.	.	.
	[sex=1]	22.531	2.821	7.987	.000	16.946	28.115
	[sex=2]	0 <sup>a</sup>	.	.	.	.	.
P_Ingestion	flowercombine	-391	.816	-.479	.632	-2.006	1.224
	Intercept	10.994	2.789	3.941	.000	5.472	16.515
	[River=Menanggul]	-2.086	2.223	-.938	.350	-6.487	2.315
	[River=Resang]	-2.666	2.464	-1.082	.281	-7.544	2.211
	[River=Tenagang Besar]	0 <sup>a</sup>	.	.	.	.	.

	[threetimes=15-18]	9.100	2.363	3.851	.000	4.422	13.778
	[threetimes=5-8]	3.183	2.292	1.389	.167	-1.354	7.720
	[threetimes=9-14]	0 <sup>a</sup>	.	.	.	.	.
	[Season=flooding]	-5.914	1.971	-3.001	.003	-9.815	-2.012
	[Season=normal]	0 <sup>a</sup>	.	.	.	.	.
	[sex=1]	-2.079	1.817	-1.144	.255	-5.677	1.518
	[sex=2]	0 <sup>a</sup>	.	.	.	.	.
	flowercombine	-.069	.525	-.131	.896	-1.109	.971
P_Rest	Intercept	45.213	5.570	8.117	.000	34.187	56.239
	[River=Menanggul]	10.090	4.439	2.273	.025	1.302	18.878
	[River=Resang]	-11.317	4.920	-2.300	.023	-21.057	-1.577
	[River=Tenagang Besar]	0 <sup>a</sup>	.	.	.	.	.
	[threetimes=15-18]	-7.616	4.719	-1.614	.109	-16.958	1.726
	[threetimes=5-8]	-7.259	4.577	-1.586	.115	-16.319	1.801
	[threetimes=9-14]	0 <sup>a</sup>	.	.	.	.	.
	[Season=flooding]	2.639	3.935	.671	.504	-5.151	10.429
	[Season=normal]	0 <sup>a</sup>	.	.	.	.	.
	[sex=1]	-11.997	3.629	-3.306	.001	-19.181	-4.813
	[sex=2]	0 <sup>a</sup>	.	.	.	.	.
	flowercombine	4.267	1.049	4.067	.000	2.190	6.344
P_Social	Intercept	2.664	1.013	2.629	.010	.658	4.670
	[River=Menanggul]	.938	.808	1.161	.248	-.661	2.536
	[River=Resang]	1.256	.895	1.403	.163	-.516	3.028
	[River=Tenagang Besar]	0 <sup>a</sup>	.	.	.	.	.
	[threetimes=15-18]	-.088	.859	-.102	.919	-1.788	1.612
	[threetimes=5-8]	.216	.833	.260	.796	-1.432	1.864
	[threetimes=9-14]	0 <sup>a</sup>	.	.	.	.	.
	[Season=flooding]	.460	.716	.642	.522	-.958	1.877
	[Season=normal]	0 <sup>a</sup>	.	.	.	.	.
	[sex=1]	-1.230	.660	-1.863	.065	-2.537	.077
	[sex=2]	0 <sup>a</sup>	.	.	.	.	.
	flowercombine	-.335	.191	-1.753	.082	-.713	.043
P_Travel	Intercept	38.610	5.148	7.501	.000	28.420	48.800
	[River=Menanggul]	-15.704	4.103	-3.828	.000	-23.826	-7.582
	[River=Resang]	6.269	4.547	1.379	.171	-2.733	15.270
	[River=Tenagang Besar]	0 <sup>a</sup>	.	.	.	.	.
	[threetimes=15-18]	-3.364	4.362	-.771	.442	-11.998	5.271
	[threetimes=5-8]	1.184	4.230	.280	.780	-7.189	9.557
	[threetimes=9-14]	0 <sup>a</sup>	.	.	.	.	.
	[Season=flooding]	8.389	3.637	2.307	.023	1.190	15.589
	[Season=normal]	0 <sup>a</sup>	.	.	.	.	.
	[sex=1]	-7.224	3.354	-2.154	.033	-13.863	-.585
	[sex=2]	0 <sup>a</sup>	.	.	.	.	.
	flowercombine	-3.473	.970	-3.582	.000	-5.392	-1.553

a. This parameter is set to zero because it is redundant.

Table 93 Multivariate General Linear Final Model for subadult category containing 4 sections A factors, B Multivariate Tests C Tests of Between-Subjects Effects, D Parameter Estimates

#### Warnings

The following factors or covariates are not used in the model: threetimes, meanml, meanyl, fruitcombine, NumBoat, people

#### Between-Subjects Factors

	Value Label	N	
River	Menanggul	58	
	Resang	28	
	Tenangang Besar	30	
threetimes	15-18	40	
	5-8	47	
	9-14	29	
Season	flooding	46	
	normal	70	
sex	1	Male	22
	2	Female	29
	3	unknown	65

Multivariate Tests<sup>c</sup>

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.551	30.723 <sup>a</sup>	4.000	100.000	.000
	Wilks' Lambda	.449	30.723 <sup>a</sup>	4.000	100.000	.000
	Hotelling's Trace	1.229	30.723 <sup>a</sup>	4.000	100.000	.000
	Roy's Largest Root	1.229	30.723 <sup>a</sup>	4.000	100.000	.000
River	Pillai's Trace	.373	5.783	8.000	202.000	.000
	Wilks' Lambda	.656	5.867 <sup>a</sup>	8.000	200.000	.000
	Hotelling's Trace	.481	5.949	8.000	198.000	.000
	Roy's Largest Root	.359	9.063 <sup>b</sup>	4.000	101.000	.000
Season	Pillai's Trace	.085	2.327 <sup>a</sup>	4.000	100.000	.061
	Wilks' Lambda	.915	2.327 <sup>a</sup>	4.000	100.000	.061
	Hotelling's Trace	.093	2.327 <sup>a</sup>	4.000	100.000	.061
	Roy's Largest Root	.093	2.327 <sup>a</sup>	4.000	100.000	.061
sex	Pillai's Trace	.049	.641	8.000	202.000	.743
	Wilks' Lambda	.951	.635 <sup>a</sup>	8.000	200.000	.748
	Hotelling's Trace	.051	.629	8.000	198.000	.753
	Roy's Largest Root	.033	.821 <sup>b</sup>	4.000	101.000	.514
flowercombine	Pillai's Trace	.166	4.989 <sup>a</sup>	4.000	100.000	.001
	Wilks' Lambda	.834	4.989 <sup>a</sup>	4.000	100.000	.001
	Hotelling's Trace	.200	4.989 <sup>a</sup>	4.000	100.000	.001
	Roy's Largest Root	.200	4.989 <sup>a</sup>	4.000	100.000	.001
River * sex	Pillai's Trace	.271	1.875	16.000	412.000	.021
	Wilks' Lambda	.747	1.913	16.000	306.143	.019
	Hotelling's Trace	.313	1.928	16.000	394.000	.017
	Roy's Largest Root	.202	5.213 <sup>b</sup>	4.000	103.000	.001
Season * sex	Pillai's Trace	.252	3.644	8.000	202.000	.001
	Wilks' Lambda	.760	3.681 <sup>a</sup>	8.000	200.000	.000
	Hotelling's Trace	.300	3.716	8.000	198.000	.000
	Roy's Largest Root	.232	5.861 <sup>b</sup>	4.000	101.000	.000

a. Exact statistic

b. The statistic is an upper bound on F that yields a lower bound on the significance level.

c. Design: Intercept + River + Season + sex + flowercombine + River \* sex + Season \* sex

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	P_Agonistic	2193.172 <sup>a</sup>	12	182.764	1.402	.177
	P_Ingestion	8159.079 <sup>b</sup>	12	679.923	2.131	.021
	P_Rest	26260.367 <sup>c</sup>	12	2188.364	3.608	.000

	P_Social	801.370 <sup>d</sup>	12	66.781	1.681	.082
	P_Travel	33780.738 <sup>e</sup>	12	2815.062	5.289	.000
Intercept	P_Agonistic	729.093	1	729.093	5.595	.020
	P_Ingestion	6749.970	1	6749.970	21.152	.000
	P_Rest	16983.648	1	16983.648	28.001	.000
	P_Social	180.837	1	180.837	4.551	.035
	P_Travel	62876.578	1	62876.578	118.144	.000
River	P_Agonistic	233.537	2	116.769	.896	.411
	P_Ingestion	3943.378	2	1971.689	6.179	.003
	P_Rest	12859.108	2	6429.554	10.601	.000
	P_Social	155.852	2	77.926	1.961	.146
	P_Travel	19175.888	2	9587.944	18.016	.000
Season	P_Agonistic	.744	1	.744	.006	.940
	P_Ingestion	26.233	1	26.233	.082	.775
	P_Rest	74.359	1	74.359	.123	.727
	P_Social	350.931	1	350.931	8.832	.004
	P_Travel	17.019	1	17.019	.032	.858
sex	P_Agonistic	162.646	2	81.323	.624	.538
	P_Ingestion	640.234	2	320.117	1.003	.370
	P_Rest	602.977	2	301.489	.497	.610
	P_Social	44.105	2	22.052	.555	.576
	P_Travel	709.380	2	354.690	.666	.516
flowercombine	P_Agonistic	103.841	1	103.841	.797	.374
	P_Ingestion	1198.001	1	1198.001	3.754	.055
	P_Rest	12342.074	1	12342.074	20.349	.000
	P_Social	4.870	1	4.870	.123	.727
	P_Travel	4692.139	1	4692.139	8.816	.004
River * sex	P_Agonistic	821.582	4	205.396	1.576	.186
	P_Ingestion	2112.120	4	528.030	1.655	.166
	P_Rest	6253.874	4	1563.468	2.578	.042
	P_Social	97.146	4	24.287	.611	.655
	P_Travel	10274.869	4	2568.717	4.827	.001
Season * sex	P_Agonistic	799.599	2	399.799	3.068	.051
	P_Ingestion	1815.145	2	907.573	2.844	.063
	P_Rest	3519.025	2	1759.513	2.901	.059
	P_Social	91.004	2	45.502	1.145	.322
	P_Travel	8360.121	2	4180.061	7.854	.001
Error	P_Agonistic	13422.439	103	130.315		
	P_Ingestion	32869.443	103	319.121		
	P_Rest	62472.704	103	606.531		
	P_Social	4092.510	103	39.733		
	P_Travel	54816.962	103	532.204		
Total	P_Agonistic	20235.847	116			
	P_Ingestion	60521.733	116			
	P_Rest	334619.005	116			
	P_Social	6867.807	116			
	P_Travel	196933.997	116			
Corrected Total	P_Agonistic	15615.611	115			
	P_Ingestion	41028.522	115			
	P_Rest	88733.070	115			
	P_Social	4893.880	115			
	P_Travel	88597.700	115			

a. R Squared = .140 (Adjusted R Squared = .040)

b. R Squared = .199 (Adjusted R Squared = .106)

c. R Squared = .296 (Adjusted R Squared = .214)

d. R Squared = .164 (Adjusted R Squared = .066)

e. R Squared = .381 (Adjusted R Squared = .309)

Parameter Estimates

Dependent Variable	Parameter	B	Std. Error	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
P_Agonistic	Intercept	7.270	3.165	2.297	.024	.992	13.547
	[River=Menanggul]	1.294	3.476	.372	.710	-5.600	8.188
	[River=Resang]	7.516	3.737	2.011	.047	.104	14.927
	[River=Tenagang Besar]	0 <sup>a</sup>	.	.	.	.	.
	[Season=flooding]	-5.931	3.030	-1.957	.053	-11.940	.079
	[Season=normal]	0 <sup>a</sup>	.	.	.	.	.
	[sex=1]	-10.874	8.028	-1.354	.179	-26.796	5.048
	[sex=2]	-2.167	5.496	-.394	.694	-13.067	8.733
	[sex=3]	0 <sup>a</sup>	.	.	.	.	.
	flowercombine	-.558	.625	-.893	.374	-1.796	.681
	[River=Menanggul] *	9.225	8.133	1.134	.259	-6.906	25.356
	[sex=1]						
	[River=Menanggul] *	.858	6.258	.137	.891	-11.554	13.270
	[sex=2]						
	[River=Menanggul] *	0 <sup>a</sup>	.	.	.	.	.
	[sex=3]						
	[River=Resang] * [sex=1]	-11.346	10.330	-1.098	.275	-31.833	9.141
	[River=Resang] * [sex=2]	-4.079	7.386	-.552	.582	-18.727	10.570
	[River=Resang] * [sex=3]	0 <sup>a</sup>	.	.	.	.	.
	[River=Tenagang Besar] *	0 <sup>a</sup>	.	.	.	.	.
	[sex=1]						
	[River=Tenagang Besar] *	0 <sup>a</sup>	.	.	.	.	.
	[sex=2]						
[River=Tenagang Besar] *	0 <sup>a</sup>	.	.	.	.	.	
[sex=3]							
[Season=flooding] * [sex=1]	15.253	6.165	2.474	.015	3.025	27.480	
[Season=flooding] * [sex=2]	3.110	5.263	.591	.556	-7.328	13.548	
[Season=flooding] * [sex=3]	0 <sup>a</sup>	.	.	.	.	.	
[Season=normal] * [sex=1]	0 <sup>a</sup>	.	.	.	.	.	
[Season=normal] * [sex=2]	0 <sup>a</sup>	.	.	.	.	.	
[Season=normal] * [sex=3]	0 <sup>a</sup>	.	.	.	.	.	
P_Ingestion	Intercept	24.187	4.953	4.883	.000	14.364	34.011
	[River=Menanggul]	-8.506	5.440	-1.564	.121	-19.294	2.283
	[River=Resang]	-7.050	5.848	-1.206	.231	-18.648	4.547
	[River=Tenagang Besar]	0 <sup>a</sup>	.	.	.	.	.
	[Season=flooding]	-5.830	4.742	-1.230	.222	-15.234	3.574
	[Season=normal]	0 <sup>a</sup>	.	.	.	.	.
	[sex=1]	-9.257	12.563	-.737	.463	-34.173	15.660
	[sex=2]	18.579	8.601	2.160	.033	1.522	35.636
	[sex=3]	0 <sup>a</sup>	.	.	.	.	.
	flowercombine	-1.894	.977	-1.938	.055	-3.832	.045
	[River=Menanggul] *	.607	12.728	.048	.962	-24.636	25.849
	[sex=1]						
	[River=Menanggul] *	-13.941	9.794	-1.423	.158	-33.365	5.482
	[sex=2]						
	[River=Menanggul] *	0 <sup>a</sup>	.	.	.	.	.
	[sex=3]						
	[River=Resang] * [sex=1]	-17.375	16.165	-1.075	.285	-49.435	14.684
[River=Resang] * [sex=2]	-26.544	11.558	-2.297	.024	-49.467	-3.621	
[River=Resang] * [sex=3]	0 <sup>a</sup>	.	.	.	.	.	

	[River=Tenagang Besar] * [sex=1]	0 <sup>a</sup>	.	.	.	.	.
	[River=Tenagang Besar] * [sex=2]	0 <sup>a</sup>	.	.	.	.	.
	[River=Tenagang Besar] * [sex=3]	0 <sup>a</sup>	.	.	.	.	.
	[Season=flooding] * [sex=1]	21.734	9.648	2.253	.026	2.600	40.868
	[Season=flooding] * [sex=2]	-8.60	8.236	-1.04	.917	-17.194	15.474
	[Season=flooding] * [sex=3]	0 <sup>a</sup>	.	.	.	.	.
	[Season=normal] * [sex=1]	0 <sup>a</sup>	.	.	.	.	.
	[Season=normal] * [sex=2]	0 <sup>a</sup>	.	.	.	.	.
	[Season=normal] * [sex=3]	0 <sup>a</sup>	.	.	.	.	.
P_Rest	Intercept	34.309	6.829	5.024	.000	20.766	47.852
	[River=Menanggal]	7.581	7.499	1.011	.314	-7.293	22.454
	[River=Resang]	-13.077	8.062	-1.622	.108	-29.065	2.912
	[River=Tenagang Besar]	0 <sup>a</sup>	.	.	.	.	.
	[Season=flooding]	-10.567	6.537	-1.616	.109	-23.531	2.398
	[Season=normal]	0 <sup>a</sup>	.	.	.	.	.
	[sex=1]	-24.927	17.320	-1.439	.153	-59.277	9.424
	[sex=2]	-34.124	11.857	-2.878	.005	-57.639	-10.608
	[sex=3]	0 <sup>a</sup>	.	.	.	.	.
	flowercombine	6.078	1.347	4.511	.000	3.406	8.750
	[River=Menanggal] * [sex=1]	30.725	17.547	1.751	.083	-4.076	65.525
	[River=Menanggal] * [sex=2]	35.912	13.502	2.660	.009	9.134	62.690
	[River=Menanggal] * [sex=3]	0 <sup>a</sup>	.	.	.	.	.
	[River=Resang] * [sex=1]	33.636	22.286	1.509	.134	-10.563	77.834
	[River=Resang] * [sex=2]	8.909	15.935	.559	.577	-22.694	40.511
	[River=Resang] * [sex=3]	0 <sup>a</sup>	.	.	.	.	.
	[River=Tenagang Besar] * [sex=1]	0 <sup>a</sup>	.	.	.	.	.
	[River=Tenagang Besar] * [sex=2]	0 <sup>a</sup>	.	.	.	.	.
	[River=Tenagang Besar] * [sex=3]	0 <sup>a</sup>	.	.	.	.	.
	[Season=flooding] * [sex=1]	10.057	13.301	.756	.451	-16.322	36.435
	[Season=flooding] * [sex=2]	27.338	11.354	2.408	.018	4.820	49.857
	[Season=flooding] * [sex=3]	0 <sup>a</sup>	.	.	.	.	.
	[Season=normal] * [sex=1]	0 <sup>a</sup>	.	.	.	.	.
	[Season=normal] * [sex=2]	0 <sup>a</sup>	.	.	.	.	.
	[Season=normal] * [sex=3]	0 <sup>a</sup>	.	.	.	.	.
P_Social	Intercept	4.569	1.748	2.614	.010	1.103	8.036
	[River=Menanggal]	1.185	1.919	.617	.538	-2.622	4.992
	[River=Resang]	-.773	2.063	-.375	.709	-4.865	3.319
	[River=Tenagang Besar]	0 <sup>a</sup>	.	.	.	.	.
	[Season=flooding]	-2.450	1.673	-1.464	.146	-5.768	.869
	[Season=normal]	0 <sup>a</sup>	.	.	.	.	.
	[sex=1]	-3.049	4.433	-.688	.493	-11.841	5.743
	[sex=2]	-.329	3.035	-.108	.914	-6.348	5.690
	[sex=3]	0 <sup>a</sup>	.	.	.	.	.
	flowercombine	.121	.345	.350	.727	-.563	.805
	[River=Menanggal] * [sex=1]	1.658	4.491	.369	.713	-7.249	10.565
	[River=Menanggal] * [sex=2]	5.039	3.456	1.458	.148	-1.814	11.893

	[River=Menanggul] * [sex=3]	0 <sup>a</sup>					
	[River=Resang] * [sex=1]	1.973	5.704	.346	.730	-9.340	13.285
	[River=Resang] * [sex=2]	1.688	4.078	.414	.680	-6.401	9.776
	[River=Resang] * [sex=3]	0 <sup>a</sup>					
	[River=Tenagang Besar] * [sex=1]	0 <sup>a</sup>					
	[River=Tenagang Besar] * [sex=2]	0 <sup>a</sup>					
	[River=Tenagang Besar] * [sex=3]	0 <sup>a</sup>					
	[Season=flooding] * [sex=1]	-.679	3.404	-.200	.842	-7.431	6.072
	[Season=flooding] * [sex=2]	-4.343	2.906	-1.494	.138	-10.107	1.421
	[Season=flooding] * [sex=3]	0 <sup>a</sup>					
	[Season=normal] * [sex=1]	0 <sup>a</sup>					
	[Season=normal] * [sex=2]	0 <sup>a</sup>					
	[Season=normal] * [sex=3]	0 <sup>a</sup>					
P_Travel	Intercept	29.664	6.397	4.638	.000	16.978	42.350
	[River=Menanggul]	-1.555	7.025	-.221	.825	-15.487	12.378
	[River=Resang]	13.384	7.552	1.772	.079	-1.593	28.361
	[River=Tenagang Besar]	0 <sup>a</sup>					
	[Season=flooding]	24.777	6.123	4.046	.000	12.633	36.922
	[Season=normal]	0 <sup>a</sup>					
	[sex=1]	48.106	16.224	2.965	.004	15.929	80.283
	[sex=2]	18.041	11.107	1.624	.107	-3.987	40.069
	[sex=3]	0 <sup>a</sup>					
	flowercombine	-3.748	1.262	-2.969	.004	-6.251	-1.244
	[River=Menanggul] * [sex=1]	-42.214	16.437	-2.568	.012	-74.813	-9.616
	[River=Menanggul] * [sex=2]	-27.868	12.648	-2.203	.030	-52.951	-2.784
	[River=Menanggul] * [sex=3]	0 <sup>a</sup>					
	[River=Resang] * [sex=1]	-6.887	20.876	-.330	.742	-48.288	34.515
	[River=Resang] * [sex=2]	20.027	14.926	1.342	.183	-9.577	49.630
	[River=Resang] * [sex=3]	0 <sup>a</sup>					
	[River=Tenagang Besar] * [sex=1]	0 <sup>a</sup>					
	[River=Tenagang Besar] * [sex=2]	0 <sup>a</sup>					
	[River=Tenagang Besar] * [sex=3]	0 <sup>a</sup>					
	[Season=flooding] * [sex=1]	-46.364	12.459	-3.721	.000	-71.073	-21.654
	[Season=flooding] * [sex=2]	-25.245	10.636	-2.374	.019	-46.338	-4.151
	[Season=flooding] * [sex=3]	0 <sup>a</sup>					
	[Season=normal] * [sex=1]	0 <sup>a</sup>					
	[Season=normal] * [sex=2]	0 <sup>a</sup>					
	[Season=normal] * [sex=3]	0 <sup>a</sup>					

a. This parameter is set to zero because it is redundant.

Table 94 Multivariate General Linear Final Model Immature category containing 4 sections A factors, B Multivariate Tests C Tests of Between-Subjects Effects, D Parameter Estimates

**Between-Subjects Factors**

		N
River	Menanggul	26
	Resang	19
	Tenagang Besar	21

threetimes	15-18	22	
	5-8	26	
	9-14	18	
	Season	flooding	21
		normal	45

Multivariate Tests<sup>c</sup>

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.188	3.245 <sup>a</sup>	4.000	56.000	.018
	Wilks' Lambda	.812	3.245 <sup>a</sup>	4.000	56.000	.018
	Hotelling's Trace	.232	3.245 <sup>a</sup>	4.000	56.000	.018
	Roy's Largest Root	.232	3.245 <sup>a</sup>	4.000	56.000	.018
threetimes	Pillai's Trace	.394	3.495	8.000	114.000	.001
	Wilks' Lambda	.616	3.839 <sup>a</sup>	8.000	112.000	.001
	Hotelling's Trace	.608	4.178	8.000	110.000	.000
	Roy's Largest Root	.580	8.267 <sup>b</sup>	4.000	57.000	.000
Season	Pillai's Trace	.315	6.448 <sup>a</sup>	4.000	56.000	.000
	Wilks' Lambda	.685	6.448 <sup>a</sup>	4.000	56.000	.000
	Hotelling's Trace	.461	6.448 <sup>a</sup>	4.000	56.000	.000
	Roy's Largest Root	.461	6.448 <sup>a</sup>	4.000	56.000	.000
meanml	Pillai's Trace	.275	5.322 <sup>a</sup>	4.000	56.000	.001
	Wilks' Lambda	.725	5.322 <sup>a</sup>	4.000	56.000	.001
	Hotelling's Trace	.380	5.322 <sup>a</sup>	4.000	56.000	.001
	Roy's Largest Root	.380	5.322 <sup>a</sup>	4.000	56.000	.001
NumBoat	Pillai's Trace	.530	15.808 <sup>a</sup>	4.000	56.000	.000
	Wilks' Lambda	.470	15.808 <sup>a</sup>	4.000	56.000	.000
	Hotelling's Trace	1.129	15.808 <sup>a</sup>	4.000	56.000	.000
	Roy's Largest Root	1.129	15.808 <sup>a</sup>	4.000	56.000	.000
people	Pillai's Trace	.523	15.371 <sup>a</sup>	4.000	56.000	.000
	Wilks' Lambda	.477	15.371 <sup>a</sup>	4.000	56.000	.000
	Hotelling's Trace	1.098	15.371 <sup>a</sup>	4.000	56.000	.000
	Roy's Largest Root	1.098	15.371 <sup>a</sup>	4.000	56.000	.000

a. Exact statistic

b. The statistic is an upper bound on F that yields a lower bound on the significance level.

c. Design: Intercept + threetimes + Season + meanml + NumBoat + people

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	P_Agonistic	538.615 <sup>a</sup>	6	89.769	1.572	.171
	P_Ingestion	1560.283 <sup>b</sup>	6	260.047	5.672	.000
	P_Rest	13540.870 <sup>c</sup>	6	2256.812	7.597	.000
	P_Social	5733.541 <sup>d</sup>	6	955.590	13.247	.000
	P_Travel	8920.753 <sup>e</sup>	6	1486.792	4.114	.002
Intercept	P_Agonistic	184.016	1	184.016	3.222	.078
	P_Ingestion	462.791	1	462.791	10.094	.002
	P_Rest	413.531	1	413.531	1.392	.243
	P_Social	184.970	1	184.970	2.564	.115
	P_Travel	3746.516	1	3746.516	10.367	.002
threetimes	P_Agonistic	132.420	2	66.210	1.159	.321
	P_Ingestion	608.644	2	304.322	6.637	.003
	P_Rest	4894.298	2	2447.149	8.238	.001
	P_Social	600.358	2	300.179	4.161	.020
	P_Travel	243.502	2	121.751	.337	.715



Season	P_Agonistic	11.323	1	11.323	.198	.658
	P_Ingestion	517.295	1	517.295	11.282	.001
	P_Rest	276.034	1	276.034	.929	.339
	P_Social	1401.742	1	1401.742	19.433	.000
	P_Travel	5392.438	1	5392.438	14.921	.000
meanml	P_Agonistic	383.626	1	383.626	6.716	.012
	P_Ingestion	288.737	1	288.737	6.297	.015
	P_Rest	2080.297	1	2080.297	7.003	.010
	P_Social	56.647	1	56.647	.785	.379
	P_Travel	1654.700	1	1654.700	4.579	.037
NumBoat	P_Agonistic	19.047	1	19.047	.333	.566
	P_Ingestion	156.014	1	156.014	3.403	.070
	P_Rest	3705.293	1	3705.293	12.474	.001
	P_Social	3845.666	1	3845.666	53.313	.000
	P_Travel	85.906	1	85.906	.238	.628
people	P_Agonistic	3.041	1	3.041	.053	.818
	P_Ingestion	176.569	1	176.569	3.851	.054
	P_Rest	4211.420	1	4211.420	14.177	.000
	P_Social	3619.971	1	3619.971	50.184	.000
	P_Travel	46.440	1	46.440	.129	.721
Error	P_Agonistic	3369.966	59	57.118		
	P_Ingestion	2705.140	59	45.850		
	P_Rest	17526.114	59	297.053		
	P_Social	4255.898	59	72.134		
	P_Travel	21322.712	59	361.402		
Total	P_Agonistic	8912.715	66			
	P_Ingestion	9871.318	66			
	P_Rest	124846.732	66			
	P_Social	26544.613	66			
	P_Travel	84016.303	66			
Corrected Total	P_Agonistic	3908.582	65			
	P_Ingestion	4265.423	65			
	P_Rest	31066.984	65			
	P_Social	9989.439	65			
	P_Travel	30243.465	65			

a. R Squared = .138 (Adjusted R Squared = .050)

b. R Squared = .366 (Adjusted R Squared = .301)

c. R Squared = .436 (Adjusted R Squared = .378)

d. R Squared = .574 (Adjusted R Squared = .531)

e. R Squared = .295 (Adjusted R Squared = .223)

#### Parameter Estimates

Dependent Variable	Parameter	B	Std. Error	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
P_Agonistic	Intercept	-23.734	12.511	-1.897	.063	-48.768	1.300
	[threetimes=15-18]	3.785	2.631	1.439	.156	-1.480	9.051
	[threetimes=5-8]	.871	2.367	.368	.714	-3.865	5.608
	[threetimes=9-14]	0 <sup>a</sup>	.	.	.	.	.
	[Season=flooding]	.900	2.020	.445	.658	-3.143	4.942
	[Season=normal]	0 <sup>a</sup>	.	.	.	.	.
	meanml	.373	.144	2.592	.012	.085	.661
NumBoat	-1.108	1.919	-.577	.566	-4.947	2.731	
people	.059	.254	.231	.818	-.449	.566	
P_Ingestion	Intercept	32.824	11.209	2.928	.005	10.395	55.253

	[threetimes=15-18]	8.307	2.358	3.523	.001	3.589	13.024
	[threetimes=5-8]	5.731	2.121	2.702	.009	1.488	9.975
	[threetimes=9-14]	0 <sup>a</sup>	.	.	.	.	.
	[Season=flooding]	-6.080	1.810	-3.359	.001	-9.702	-2.458
	[Season=normal]	0 <sup>a</sup>	.	.	.	.	.
	meanml	-.324	.129	-2.509	.015	-.582	-.066
	NumBoat	3.171	1.719	1.845	.070	-.269	6.611
	people	-.446	.227	-1.962	.054	-.900	.009
P_Rest	Intercept	-16.840	28.531	-.590	.557	-73.930	40.249
	[threetimes=15-18]	-22.612	6.001	-3.768	.000	-34.619	-10.604
	[threetimes=5-8]	-17.939	5.398	-3.323	.002	-28.740	-7.137
	[threetimes=9-14]	0 <sup>a</sup>	.	.	.	.	.
	[Season=flooding]	-4.441	4.607	-.964	.339	-13.661	4.778
	[Season=normal]	0 <sup>a</sup>	.	.	.	.	.
	meanml	.869	.328	2.646	.010	.212	1.526
	NumBoat	-15.454	4.376	-3.532	.001	-24.210	-6.698
	people	2.177	.578	3.765	.000	1.020	3.334
P_Social	Intercept	22.046	14.059	1.568	.122	-6.087	50.178
	[threetimes=15-18]	7.785	2.957	2.633	.011	1.868	13.703
	[threetimes=5-8]	6.455	2.660	2.427	.018	1.132	11.778
	[threetimes=9-14]	0 <sup>a</sup>	.	.	.	.	.
	[Season=flooding]	-10.008	2.270	-4.408	.000	-14.552	-5.465
	[Season=normal]	0 <sup>a</sup>	.	.	.	.	.
	meanml	-.143	.162	-.886	.379	-.467	.180
	NumBoat	15.744	2.156	7.302	.000	11.429	20.059
	people	-2.018	.285	-7.084	.000	-2.588	-1.448
P_Travel	Intercept	85.704	31.470	2.723	.008	22.734	148.675
	[threetimes=15-18]	2.734	6.619	.413	.681	-10.510	15.979
	[threetimes=5-8]	4.881	5.954	.820	.416	-7.033	16.795
	[threetimes=9-14]	0 <sup>a</sup>	.	.	.	.	.
	[Season=flooding]	19.630	5.082	3.863	.000	9.461	29.799
	[Season=normal]	0 <sup>a</sup>	.	.	.	.	.
	meanml	-.775	.362	-2.140	.037	-1.500	-.050
	NumBoat	-2.353	4.826	-.488	.628	-12.011	7.305
	people	.229	.638	.358	.721	-1.047	1.505

a. This parameter is set to zero because it is redundant.



# Appendix H Surveys

## Part 1 Permission obtained



UNIT PERANCANG EKONOMI  
Economic Planning Unit  
JABATAN PERDANA MENTERI  
Prime Minister's Department  
BLOK B5 & B6,  
PUSAT PENTADBIRAN KERAJAAN PERSEKUTUAN  
62502 PUTRAJAYA,  
MALAYSIA

Telefon: 88883333  
Fax:  
603-88883798

Ruj. Tuan:  
Your Ref:

Ruj. Kami: UPE: 40/200/19 SJ. 1011  
Our Ref:

Tarikh: 12 Mei 2003  
Date:

Pengarah Imigresen,  
Jabatan Imigresen,  
88550 Kota Kinabalu, Sabah.  
(Bahagian Visa)

Tuan,

### PERMOHONAN MENJALANKAN PENYELIDIKAN DI MALAYSIA

Nama Penyelidik : HEATHER CHRISTINE LEASOR  
Passport : 084028177  
Warganegara : AMERIKA  
Tajuk Penyelidikan : " COST BENEFIT ANALYSIS OF THE EFFECTS OF  
TOURISM/ECOTOURISM ON PROBOSCIS MONKEYS (NASALIS  
LARVATUS) ON THE LOWER KINABATANGAN RIVER, SABAH,  
MALAYSIA "  
Tempoh Soh : Nombor pass 1498 sah laku sehingga 31 JULAI 2004.

Adalah saya merujuk kepada perkara yang tersebut di atas dan dimaklumkan bahawa permohonan untuk menjalankan penyelidikan bagi penyelidik di atas telah diluluskan oleh **Jawatankuasa Penggalakan dan Penyelarasan Penyelidikan, Unit Perancang Ekonomi**.

2. Adalah diharapkan pihak tuan dapat mengeluarkan Pas Lawatan (Ikhfisas) kepada pemohon selama tempoh penyelidikannya.

Sekian, terima kasih.

• BERKHIDMAT UNTUK NEGARA •

Saya yang menurut perintah,

(ROBATUL ADAYIAH MOHD ISA)  
b.p. Ketua Pengarah,  
Unit Perancang Ekonomi,  
(Seksyen Ekonomi Makro & Penilaian)  
E-mail: robatul@epu.lpm.my



JABATAN HIDUPAN LIAR  
(IBU PEJABAT)  
WILDLIFE DEPARTMENT (HQ)  
Tingkat 5, Blok B, Wisma MUIS,  
5th Floor, Block B, MUIS Complex,  
88100 KOTA KINABALU, SABAH, MALAYSIA.  
No. Tel: 088-215353, 210385, 215330, 213502, 214515, 215167, 215140.  
No. Faks: 088-222476. E-mail: jhlsabah@tm.net.my  
Sabah.Net: jhl@sabah.gov.my



(Sila catatkan Rujukan Fail kami ini apabila menjawab)

Rujukan Kami : JHL.600-6/2  
Tarikh : 20 Mei 2003

Ketua Pengarah  
Jabatan Imigresen  
(Cawangan Kota Kinabalu)  
Wisma Dangbandang  
**KOTA KINABALU, SABAH.**

Tuan,

### PERMOHONAN VISA - HEATHER CHRISTINE LEASOR

Dengan segala hormatnya saya di arah untuk merujuk perkara di atas.

2. Sukacita dimaklumkan bahawa penama di atas, adalah merupakan seorang penyelidik yang akan menjalankan penyelidikan beliau di Sanktuari Hidupan Liar Hilir Kinabatangan. Tajuk kajian beliau ialah "Cost Benefit Analysis Of The Effects Of Tourism/On The Lower Kinabatangan River, Sabah, Malaysia". Sebagai makluman tuan pihak Unit Perancang Ekonomi telahpun meluluskan permohonan penyelidikan beliau dan pihak Jabatan pula berpendapat kajian ini sangat berfaedah kepada Jabatan untuk jangkamasa panjang khususnya dalam merujuk plan Pengurusan Pelancongan di kawasan Hilir Kinabatangan.
3. Sehubungan dengan itu, Jabatan ini ingin memohon Pas Visa untuk penama di atas bagi maksud menayakan kajian tersebut.
4. Bersama ini disertakan perkara-perkara berikut :
  - 4.1 Borang Permohonan untuk Pas Lawatan (Imm.12) (Oin.4/50)
  - 4.2 Bon Jaminan (H.IF.11)
  - 4.3 2 Keping Gambar
  - 4.4 Salinan Pasport
  - 4.5 Salinan Surat Kelulusan daripada Unit Perancang Ekonomi
5. Segala perhatian dan tindakan segera pihak tuan didahului dengan ucapan ribuan terima kasih.

Sekian, terima kasih.

.....2/-

MSAB/ahj  
11.35am-200503

**DADAH MEMBAWA KESENGSARAAN  
PELIHARALAH KEHARMONIAN KELUARGA ANDA**

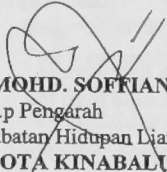
PKC 0103 (I.) - 2002

Rujukan Kami : JHL.600-6/2  
Tarikh : 20 Mei 2003

2

**"BERKHIDMAT UNTUK NEGARA DENGAN BERSIH, CEKAP DAN AMANAH"**

Saya yang menurut perintah,

  
**(MOHD. SOFFIAN B. ABU BAKAR)**  
B.p Pengarah  
Jabatan Hidupan Liar Sabah  
**KOTA KINABALU.**

MSAB/nhj  
11.35am-200503



OFFICE OF THE DEAN  
FACULTY OF ARTS  
23 April 2003

CANBERRA ACT 0200 AUSTRALIA  
TELEPHONE: +61 2 6125 4585  
FACSIMILE: +61 2 6125 4915  
EMAIL: dean.art@anu.edu.au

Ref: DA151/03 3923986

Ms Heather Leasor  
c/- Archaeology & Anthropology  
Faculty of Arts  
ANU

Dear Heather

I note from your letter dated 14 April you are proposing to undertake fieldwork in Sukau, Sabah, Malaysia from the end of April until July 2004. I also note from the current DFAT Travel Advice notice that Australians in Malaysia are warned to *'exercise extreme caution and monitor carefully developments that might affect their safety. Australians are also advised to exercise particular care when travelling in the state of Sabah, and the islands off the east coast of Sabah.'*

The University has a duty of care to you, as a student, to minimise any risk to your security and safety. That is our primary concern. That said, I do recognise the essential nature of your field research in Malaysia, based as it is upon tourism effects and the local proboscis monkey population. I also note that your command of Malay is sufficient to enable you to monitor local news reports.

Although I am prepared to authorise your travel in this instance, I do so on the following conditions:

- (a) you purchase a ticket that provides you with the flexibility to change your travel plans in the event of an emergency;
- (b) you have developed a clear evacuation plan that you would execute in the event of an emergency. (I note you have included your proposed evacuation plan in your letter of 14 April).

I would ask you to note that it may, at some time, be necessary to recall you if circumstances (including the potential spread of the SARS virus) warrant your evacuation from Malaysia.

Yours sincerely

Professor Adam Shoemaker  
Dean, Faculty of Arts

cc. Professor Francesca Merlan, Head, School of Archaeology and Anthropology  
Professor Colin Groves, Archaeology and Anthropology (Supervisor)

Ref: DA151/03 3923986  
Heather Christine Leasor

More Explicit Evacuation Plan for Heather Christine Leasor's proposed fieldwork in Sabah Malaysia.

Before Departure to Malaysia the following steps will be taken to ensure safety:

- Contact/emergency information given to Family and friends in Australia and America.
- Copies of passport and important documents left in secure location with Department/Graduate Student Administrator.
- Possess valid travel and health insurance.

Upon Arrival in Malaysia:

- Register with the United State Embassy in Kula Lumpur and receive their updates.
- Register with all local authorities in Kula Lumpur, Kota Kinabalu, and Sukau.
- Purchase mobile phone and distribute the number to the University, Family and Friends.
- Arrange a number of safe houses where my presence is known that can assist in safety measures in case of evacuation.

Precautionary measures:

- Monitor via radio, local newspaper, television or other means the current political state of affairs locally and worldwide.
- Maintain travel documents and other important documents in a safe and secure location.
- Maintain a ready bag (with clothes and other important goods for evacuation) at all times.
- Have completed all recommended health precautions, shots/vaccines, and maintain an adequate medical kit.
- Maintain low key behaviour and appearance in order to minimise any sort of threat or risk of theft or other violence.
- Avoid all large rallies when possible.

Evacuation Plan:

- Posses a flexible international airline ticket for return to Australia.
  - Familiarity with several alternate routes out of the local area. The options are river travel, road travel and through the forest travel from Sukau.
  - Maintain contact with the US Embassy and follow all advisories for mode of evacuation and other assistance.
  - Evacuation option 1: Fly direct from Sabah to Singapore via safe local airlines. Then make my way when safe via Qantas Airlines home to Australia.
  - Evacuation option 2: If for any reason air travel is not safe, travel over land to Brunei via bus or hired car. Then fly out of Brunei via international Airlines.
  - Evacuation option 3: Travel across Northern Borneo via bus or hire car, and then via air or boat to Singapore.
  - I have friends in Singapore who can assist me once I have made it that far.
- 
- I posses multiple credit cards which can assist in my purchase of extra airfare if need be. I also currently posses a flexible airline ticket so that travel dates may be altered.
  - I also have in my possession a current international student card which also has evacuation assistance included.



THE AUSTRALIAN NATIONAL UNIVERSITY



RESEARCH SERVICES OFFICE

Human Ethics Officer  
Sylvia Deutsch

CANBERRA ACT 0200 AUSTRALIA  
TELEPHONE: +61 2 6125 2900  
FACSIMILE: +61 2 6125 4807  
EMAIL: Sylvia.Deutsch@anu.edu.au

13 November 2002

Ms Heather Leasor  
Postgraduate student  
School of Archaeology and Anthropology  
Faculty of Arts  
The Australian National University  
ACT 0200

Dear Ms Leasor,

**Protocol 2002/200**

**Cost benefit analysis of the effects of tourism/ecotourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia**

On behalf of the Human Research Ethics Committee I am pleased to advise that the above protocol has been approved as per the attached *Outcome of Consideration of Protocol*. Please note that as a formality this approval is subject to formal ratification by the Committee at its next meeting on 29 November 2002.

For your information:

1. Under the NHMRC/AVCC *National Statement on Ethical Conduct in Research Involving Humans* we are required to follow up research that we have approved. Once a year (or sooner for short projects) we shall request a brief report on any ethical issues which may have arisen during your research and whether it proceeded according to the plan outlined in the above protocol.
2. Please notify the Committee of any changes to your protocol in the course of your research, and when you complete or cease working on this project.
3. The validity of this current approval is five years' maximum from the date shown on the attached *Outcome of Consideration of Protocol* form. For longer projects you are required to seek renewed approval from the Committee.

Yours sincerely,

Sylvia Deutsch

Secretary, Human Research Ethics Committee



**THE AUSTRALIAN NATIONAL UNIVERSITY**

**HUMAN RESEARCH ETHICS COMMITTEE**

Outcome of Consideration of Protocol

**Researcher:** Ms Heather Leason  
**Contact details:** Postgraduate Student, School of Archaeology and Anthropology, Faculty of Arts  
**Protocol No.** 2002/200  
**Title:** Cost benefit analysis of the effects of tourism/ecotourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia  
**Date on application:** 1 October 2002    **Date received in Research Services Office:** 9 October 2002

**On behalf of the Human Research Ethics Committee,**

**I approve/~~do not approve~~ the above protocol.**

**Approval is subject to the following conditions:**

.....  
.....  
.....

**Reasons for non-approval:**

.....  
.....  
.....

**Review due:** .....

**Chairperson:** *Hilary Charlesworth* ..... **Date:** *13.11.02* .....

**(Professor Hilary Charlesworth)**

Heather Leasor  
Calon PhD,  
School of Archaeology & Anthropology  
The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Alamat di Sabah: NO WDT543 90009 Sandakan, Sabah

Kepada:

Tarikh:

En. Proboscis lodge....

Tuan,

PENYELIDIKAN MONYET BANGKATAN DI HILAR KINABATANGAN

Saya, Heather Leasor, ingin memaklumkan pada pihak Tuan bahawa saya pelajar jurusan doctor dari *Australian National University* ingin membuat kajian di Hilir Kinabatangan. Kajian itu memfokuskan kepada ecology monyet bangkatan dan kesan daripada aktiviti pelancongan. Tempoh penyelidikan saya ialah selama setahun bermula pada 1hb June 2003 dan tamat pada 31 Julai 2004.

Kajian tersebut akan di buat di kawasan Sungai Menanggul, Sungai Tengang Besar, dan Sungai Resang. Selain dari itu juga saya mengambil pembantu penyelidik dari penduduk kampung Sukau.

Untuk pengatahuan Tuan, saya telah mendapat kebenaran dan Pas Penyelidikan (Nombor 1498) daripada Unit Perancang Ekonomi (Jabatan Perdana Menteri) di Kuala Lumpur. Selama saya di Sabah saya di bawah pengawasan Jabatan Hidupan Liar Sabah.

Segala hasil penyelidikan seperti laporan saya akan di berikan kepada pihak Tuan setelah selesai tempoh kajian saya. Saya bersedia memberikan maklumat yang lebih terperinci kepada pihak Tuan pada bila-bila masa.

Segala kerjasama dari pihak Tuan amatlah saya hargai demi untuk menjayakan penyelidikan saya.

Sekian dan terima kasih,  
Yang benar,

Heather Leasor

Heather Leasor  
Candidate PhD,  
School of Archaeology & Anthropology  
The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Address in Sabah: NO WDT543 90009 Sandakan, Sabah

Regarding: Permission to interview

Date:

Proboscis Monkey Lodge  
ECT....

Dear Sir or Madam,

My name is Heather C. Leasor and I am a Ph.D. candidate from Australian National University who is studying in Sukau for a year and a half. My project is on the ecology of the proboscis monkey and the activities of tourist. The proper working title is "Cost Benefit Analysis of the Effects of Tourism/Ecotourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia." I have a research pass (Number 1498) from Unit Perancang Ekonomi (Jabatan Perdana Menteri) in Kuala Lumpur. In Sabah my in country counter part is the Jabatan Hidupan Liar Sabah.

I am certain your staff and guests have seen me and my staff from Sukau working on the Sg. Menanggul, Sg. Tenegang Besar, and Sg. Resang.

The next phase of my project includes interviews with lodge owners, lodge staff and visiting guests as well as the Sukau community. I would like to obtain your permission to visit your lodge a few nights a week for the next 3-4 months and have short interviews with your staff and guests. I am enclosing a working document of the types of questions that will be asked as well as the permission statement that is mandatory from the Australian National University to conduct such work. Each interview is completely voluntary, anonymous and un-obtrusive. If at any time your staff or guest wish to stop the interview they may do so with no questions asked.

At this time I would like to gain your permission to conduct these interviews as well as find out times which would be most conducive to you, your staff and guests. Upon receipt of this letter could you kindly reply with your permission to conduct research and the times which are best? Your earliest attention to this matter is greatly appreciated as my research time is coming close to ending and I would very much like to begin these interviews within the next week or two.

As a gesture of my appreciation to you and your company I will give you the report of these interviews for your use upon the completion of this project. This study is done in the attempt to better tourism and its longevity both for the animals involved, the tourists, the lodges and the community of Sukau.

Thank you for your time and assistance in this matter.

Sincerely,  
Heather C. Leasor

Ph.D. Candidate Australian National University

Heather Leasor  
Calon PhD,  
School of Archaeology & Anthropology  
The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Alamat di Sabah: NO WDT543 90009 Sandakan, Sabah

Kepada: Interview

Tarikh:

En. Proboscis lodge....

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Sekian dan terima kasih,  
Yang benar,

Heather Leasor

Heather Leasor  
Candidate PhD,  
School of Archaeology & Anthropology  
The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Address in Sabah: NO WDT543 90009 Sandakan, Sabah

Regarding: Permission to interview

Date: 25/4/2004

Head of Sukau Homestay Program  
Kampung Sukau

Dear Sir or Madam

My name is Heather C. Leasor and I am a Ph.D. candidate from Australian National University who is studying in Sukau for a year and a half. My project is on the ecology of the proboscis monkey and the activities of tourist. The proper working title is "Cost Benefit Analysis of the Effects of

Tourism/Ecotourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia." I have a research pass (Number 1498) from Unit Perancang Ekonomi (Jabatan Perdana Menteri) in Kuala Lumpur. In Sabah my in country counter part is the Jabatan Hidupan Liar Sabah.

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The next phase of my project includes interviews with lodge owners, lodge staff and visiting guests as well as the Sukau community. I would like to obtain your permission to visit your lodge a few nights a week for the next 3-4 months and have short interviews with your staff and guests. I am enclosing a working document of the types of questions that will be asked as well as the permission statement that is mandatory from the Australian National University to conduct such work. Each interview is completely voluntary, anonymous and un-obtrusive. If at any time your staff or guest wish to stop the interview they may do so with no questions asked.

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Thank you for your time and assistance in this matter.

Sincerely,  
Heather C. Leasor  
Ph.D. Candidate Australian National University

Heather Leasor  
Candidate PhD,  
School of Archaeology & Anthropology  
The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Address in Sabah: NO WDT543 90009 Sandakan, Sabah

Regarding: Permission to interview

Date: 25/4/2004

S.Cede Purdente  
Sukau Tomanggong Riverview Lodge  
Sukau Kinabatangan

Dear S.Cede Purdente

My name is Heather C. Leasor and I am a Ph.D. candidate from Australian National University who is studying in Sukau for a year and a half. My project is on the ecology of the proboscis monkey and the activities of tourist. The proper working title is "Cost Benefit Analysis of the Effects of Tourism/Ecotourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia." I have a research pass (Number 1498) from Unit Perancang Ekonomi (Jabatan Perdana Menteri) in Kuala Lumpur. In Sabah my in country counter part is the Jabatan Hidupan Liar Sabah.

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Sincerely,  
Heather C. Leasor  
Ph.D. Candidate Australian National University

Heather Leasor  
Candidate PhD,  
School of Archaeology & Anthropology  
The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Address in Sabah: NO WDT543 90009 Sandakan, Sabah

Regarding: Permission to interview

Date: 25/4/2004

Manager/Supervisor  
Sukau Tomanggong Riverview Lodge  
Sukau Kinabatangan

Dear Sir or Madam,

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Thank you for your time and assistance in this matter.

Sincerely,  
Heather C. Leasor  
Ph.D. Candidate Australian National University

Heather Leasor  
Candidate PhD,  
School of Archaeology & Anthropology  
The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Address in Sabah: NO WDT543 90009 Sandakan, Sabah

Regarding: Permission to interview

Date: 25/4/2004

En. Esri Masri  
Sukau B & B  
Sukau Kinabatangan

Dear En. Esri Masri

My name is Heather C. Leasor and I am a Ph.D. candidate from Australian National University who is studying in Sukau for a year and a half. My project is on the ecology of the proboscis monkey and the activities of tourist. The proper working title is "Cost Benefit Analysis of the Effects of Tourism/ Ecotourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia." I have a research pass (Number 1498) from Unit Perancang Ekonomi (Jabatan Perdana Menteri) in Kuala Lumpur. In Sabah my in country counter part is the Jabatan Hidupan Liar Sabah.

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Sincerely,  
Heather C. Leasor  
Ph.D. Candidate Australian National University



Heather Leasor  
Candidate PhD,  
School of Archaeology & Anthropology  
The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Address in Sabah: NO WDT543 90009 Sandakan, Sabah

Regarding: Permission to interview

Date: 25/4/2004

Suhairi Esri  
Sukau B & B  
Sukau Kinabatangan

Dear Suhairi Esri,

My name is Heather C. Leasor and I am a Ph.D. candidate from Australian National University who is studying in Sukau for a year and a half. My project is on the ecology of the proboscis monkey and the activities of tourist. The proper working title is "Cost Benefit Analysis of the Effects of Tourism/Ecotourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia." I have a research pass (Number 1498) from Unit Perancang Ekonomi (Jabatan Perdana Menteri) in Kuala Lumpur. In Sabah my in country counter part is the Jabatan Hidupan Liar Sabah.

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Heather C. Leasor  
Ph.D. Candidate Australian National University

Heather Leasor  
Candidate PhD,  
School of Archaeology & Anthropology  
The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Address in Sabah: NO WDT543 90009 Sandakan, Sabah

Regarding: Permission to interview

Date: 25/4/2004

Albert Teo  
Sukau Rainforest Lodge  
Lot 74, 1st Floor Blk J, Bandar Pasaraya,  
Mile 4, 90007 Sandakan.

Dear Albert Teo

My name is Heather C. Leasor and I am a Ph.D. candidate from Australian National University who is studying in Sukau for a year and a half. My project is on the ecology of the proboscis monkey and the activities of tourist. The proper working title is "Cost Benefit Analysis of the Effects of Tourism/ Ecotourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia." I have a research pass (Number 1498) from Unit Perancang Ekonomi (Jabatan Perdana Menteri) in Kuala Lumpur. In Sabah my in country counter part is the Jabatan Hidupan Liar Sabah.

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Sincerely,  
Heather C. Leasor  
Ph.D. Candidate Australian National University

Heather Leasor  
Candidate PhD,  
School of Archaeology & Anthropology  
The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Address in Sabah: NO WDT543 90009 Sandakan, Sabah

Regarding: Permission to interview

Date: 25/4/2004

Leroy or Manager/Supervisor  
Sukau Rainforest Lodge  
Lot 74, 1st Floor Blk J, Bandar Pasaraya,  
Mile 4, 90007 Sandakan.

Dear Dear Sir or Madam,

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The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Address in Sabah: NO WDT543 90009 Sandakan, Sabah

Regarding: Permission to interview

Date: 25/4/2004

Wembley Mogindol or Manager Supervisor  
Sukau Proboscis Lodge  
A1103, 11th Floor, Wisma Merdeka, Jln Tun Razak,  
88000 Kota Kinabalu.

Dear Dear Sir or Madam,

My name is Heather C. Leasor and I am a Ph.D. candidate from Australian National University who is studying in Sukau for a year and a half. My project is on the ecology of the proboscis monkey and the activities of tourist. The proper working title is "Cost Benefit Analysis of the Effects of Tourism/Ecotourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia." I have a research pass (Number 1498) from Unit Perancang Ekonomi (Jabatan Perdana Menteri) in Kuala Lumpur. In Sabah my in country counter part is the Jabatan Hidupan Liar Sabah.

I am certain your staff and guests have seen me and my staff from Sukau working on the Sg. Menanggul, Sg. Tenegang Besar, and Sg. Resang.

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At this time I would like to gain your permission to conduct these interviews as well as find out times which would be most conducive to you, your staff and guests. Upon receipt of this letter could you kindly reply with your permission to conduct research and the times which are best? Your earliest attention to this matter is greatly appreciated as my research time is coming close to ending and I would very much like to begin these interviews within the next week or two.

As a gesture of my appreciation to you and your company I will give you the report of these interviews for your use upon the completion of this project. This study is done in the attempt to better tourism and its longevity both for the animals involved, the tourists, the lodges and the community of Sukau.

Thank you for your time and assistance in this matter.

Sincerely,  
Heather C. Leasor  
Ph.D. Candidate Australian National University

Heather Leasor  
Candidate PhD,  
School of Archaeology & Anthropology  
The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Address in Sabah: NO WDT543 90009 Sandakan, Sabah

Regarding: Permission to interview

Date: 25/4/2004

Datuk Owner of  
Sukau Proboscis Lodge  
A1103, 11th Floor, Wisma Merdeka, Jln Tun Razak,  
88000 Kota Kinabalu.

Dear Datuk,

My name is Heather C. Leasor and I am a Ph.D. candidate from Australian National University who is studying in Sukau for a year and a half. My project is on the ecology of the proboscis monkey and the activities of tourist. The proper working title is "Cost Benefit Analysis of the Effects of Tourism/Ecotourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia." I have a research pass (Number 1498) from Unit Perancang Ekonomi (Jabatan Perdana Menteri) in Kuala Lumpur. In Sabah my in country counter part is the Jabatan Hidupan Liar Sabah.

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The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Address in Sabah: NO WDT543 90009 Sandakan, Sabah

Regarding: Permission to interview

Date: 25/4/2004

Mr Stephen Liew  
Wildlife Expeditions Sdn Bhd  
P.O. Box 3507,  
90739 Sandakan.

Dear Mr Stephen Liew,

My name is Heather C. Leasor and I am a Ph.D. candidate from Australian National University who is studying in Sukau for a year and a half. My project is on the ecology of the proboscis monkey and the activities of tourist. The proper working title is "Cost Benefit Analysis of the Effects of Tourism/Ecotourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia." I have a research pass (Number 1498) from Unit Perancang Ekonomi (Jabatan Perdana Menteri) in Kuala Lumpur. In Sabah my in country counter part is the Jabatan Hidupan Liar Sabah.

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The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Address in Sabah: NO WDT543 90009 Sandakan, Sabah

Regarding: Permission to interview

Date: 25/4/2004

Arsenia Tangbawan or Manager/Supervisor  
Wildlife Expeditions Sdn Bhd  
P.O. Box 3507,  
90739 Sandakan.

Dear Manager/Supervisor,

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Heather Leasor  
Candidate PhD,  
School of Archaeology & Anthropology  
The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Address in Sabah: NO WDT543 90009 Sandakan, Sabah

Regarding: Permission to interview

Date: 25/4/2004

Mis Chin Manager or Supervisor  
Sri Menanggol Cabin

Dear Mis Chin,

My name is Heather C. Leasor and I am a Ph.D. candidate from Australian National University who is studying in Sukau for a year and a half. My project is on the ecology of the proboscis monkey and the activities of tourist. The proper working title is "Cost Benefit Analysis of the Effects of Tourism/Ecotourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia." I have a research pass (Number 1498) from Unit Perancang Ekonomi (Jabatan Perdana Menteri) in Kuala Lumpur. In Sabah my in country counter part is the Jabatan Hidupan Liar Sabah.

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School of Archaeology & Anthropology  
The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Address in Sabah: NO WDT543 90009 Sandakan, Sabah

Regarding: Permission to interview

Date: 25/4/2004

Owner  
Sri Menanggol Cabin

Dear Sir or Madam,

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Ph.D. Candidate Australian National University

Heather Leasor  
Candidate PhD,  
School of Archaeology & Anthropology  
The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Address in Sabah: NO WDT543 90009 Sandakan, Sabah

Regarding: Permission to interview

Date: 25/4/2004



Amy Chin Siew Mei  
S.I. Tours  
P.O. Box 1962  
90722 Sandakan

Dear Amy Chin Siew Mei,

My name is Heather C. Leasor and I am a Ph.D. candidate from Australian National University who is studying in Sukau for a year and a half. My project is on the ecology of the proboscis monkey and the activities of tourist. The proper working title is "Cost Benefit Analysis of the Effects of Tourism/Ecotourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia." I have a research pass (Number 1498) from Unit Perancang Ekonomi (Jabatan Perdana Menteri) in Kuala Lumpur. In Sabah my in country counter part is the Jabatan Hidupan Liar Sabah.

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School of Archaeology & Anthropology  
The Faculties, A.D Hope Building #14  
Australian National University  
Canberra, ACT 0200 Australia

Address in Sabah: NO WDT543 90009 Sandakan, Sabah

Regarding: Permission to interview

Date: 25/4/2004

Lee Teck Seng or Manager/Supervisor  
S.I. Tours  
P.O. Box 1962  
90722 Sandakan

Dear Manager/Supervisor,

My name is Heather C. Leasor and I am a Ph.D. candidate from Australian National University who is studying in Sukau for a year and a half. My project is on the ecology of the proboscis monkey and the activities of tourist. The proper working title is "Cost Benefit Analysis of the Effects of Tourism/Ecotourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia." I have a research pass (Number 1498) from Unit Perancang Ekonomi (Jabatan Perdana Menteri) in Kuala Lumpur. In Sabah my in country counter part is the Jabatan Hidupan Liar Sabah.

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Thank you for your time and assistance in this matter.

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Heather C. Leasor  
Ph.D. Candidate Australian National University

## **Part2 Lodge managers survey**

### Questions for Lodge managers or owners

1. Name of managers/owner filling out form.
2. Name of Lodge.
3. Name of tourist agency.
4. When was lodge built and opened?
  
5. Who built the lodge (local or other)?
6. Where was the timber procured from for the lodge construction?
7. Where were the interiors procured from? (tables, chairs, beds etc.) (local made or outside sources)
8. Who owns the land (local or lodge)?
9. If rented land length of lease.
10. What rules/guidelines/permission were required to build the lodge?
11. What rules/guidelines/permission are required to operate the lodge?
12. Was an Environmental Impact Assessment done prior to building?
13. Were limits of acceptable change set before lodge development?
  
14. Number of employees:
15. Boatman
16. Guides
17. House keeping
18. Cook
19. Repairmen
20. Other
  
21. Number of local employees:
22. Boatman
23. Guides
24. House keeping
25. Cook
26. Repairmen
27. Other
  
28. Are boats owned by lodge or locals?
29. Number of boats owned by lodge? And/or number of local boats used by lodge?
30. What stroke engine used? (2 or 4 stroke)
31. What source of fuel used? (grade or type of petrol)
32. If electric motors are used how are they recharged?
  
33. Number of guest per year.
34. Do guests pay a conservation fee?
35. If yes where does this money go to?
36. How are guest transported to the lodge?
37. How are transport prices determined?
38. Number/type of activities available to guests?
39. What educational opportunities are available to guests?
40. What sorts of goods are for sale to guests?
41. Where are these goods from?
  
42. From where is food for the lodge purchased?
  
43. Is recycling done at the lodge?

44. Is composting done at the lodge?
45. Where/how is trash disposed of?
46. What sanitation (septic system) is available for toilet facilities? (river, leach line, seepage pit, sand filters, other)
47. Where is water for toilets and showers procured from?
48. How is drinking water treated?
49. Is unlimited drinking water provided complimentary?
50. Is environmentally friendly soap provided?
51. How are soiled linens cleaned?
52. What sorts of electricity or lighting are used at the lodge?
53. Are the boundaries of the sanctuary known by all boatman, guides and managers?
54. Are the rules and regulations of the sanctuary known by all boatman, guides and managers?
55. Where was this information obtained from if it is known?
56. Are guests briefed on appropriate behaviour/actions before partaking in any and all activities?
57. Are guests briefed on expectations of the activity before partaking in it?
58. Any other Comments you wish to make in regards to your lodge, activities or history.  
Please feel free to attach more pages if necessary and any other documents you wish.

## **Part 3 Information sheet Local and Tourist**

### **Information for Sukau Participants**

My name is Heather Leasor. I am a PhD student at the Australian National University in Canberra, Australia and am conducting surveys in Sukau as part of a larger study for my PhD. The complete title of the study is Cost Benefit Analysis of the Effects of Tourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia.

The larger study intends to look at the feasibility of sustainable tourism on the proboscis monkey. This will be achieved by studying the behaviour and ecology of the proboscis monkey through river censuses and full-day follows. Interviews and surveys of the local community and the tourists who are participating in the proboscis monkey centered activities will also be conducted to measure their place along the Duffus and Dearden's (1990) evolution of the tourist and site continuum. The aim of this study is to help the people of Sukau to ensure that tourism in the area is sustainable both for the animals and the humans involved for the long term while working with the Malaysian government and tour operators. This study wants to help the community and the animals of the area to live in harmony while still allowing for tourism and development. This study will identify potential improvements in current tourism management strategies to the community and the government. This study intends to identify a link between tourist expectations and the Sukau community's expectations and focus them on nature conservation. To do this your assistance is needed so that your accurate views and beliefs may be obtained.

The Sukau community, the Malaysian government and Non Government Organizations working around Sukau will receive the results of this study. There will be no names mentioned in the information and there is no way to link any family with any particular portion of the information. No names will be kept with the survey and all information will be kept safe to ensure anonymity.

Participation is entirely voluntary! The survey is a one time event which should take around an hour. If your family chooses to participate then changes its mind you can withdraw from the study at any time during the survey.

The study wants to know your feelings and beliefs about tourism, tourists, and the animals of the area. It will include brief questions on family history in Sukau as well as family income questions. The next section will deal with interactions with tourists, attitudes about tourists and desires for actions of tourists. The following section will deal with attitudes about the institution of tourism and desires for the future of tourism in the area and in your lives. The last section has general questions about the animals of the area to measure feelings toward them and knowledge about them to help in setting up programs for the community regarding animal conservation.

If you have any questions about the study please feel free to contact me.

Heather Leasor at 0196951962 or leave a message with your lodge marked urgent for Heather Leasor until August 2004.

You may also write to Heather Leasor, Dept. of Archaeology and Anthropology, The Faculties, A.D. Hope Bldg 14 Ellery Crescent, Australian National University ACT 0200 Australia

For further enquiries as to ethical concerns please contact

Sylvia Deutsch, Human Ethics Officer

Research Services Office, The Australian National University ACT 0200 Australia

Tel.: 61-2-6125-2900 Fax: 61-2-6125-4807 Email: Human.Ethics.Officer@anu.edu.au

### Information for tourist Participants

My name is Heather Leasor. I am a PhD student at the Australian National University in Canberra, Australia and am conducting surveys in Sukau as part of a larger study for my PhD. The complete title of the study is Cost Benefit Analysis of the Effects of Tourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia.

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The Sukau community, the Malaysian government and Non Government Organizations working around Sukau will receive the results of this study. There will be no names mentioned in the information and there is no way to link any individual or family with any particular portion of the information. No names, or initials, will be kept with the survey and all information will be kept safe to ensure anonymity.

Participation is entirely voluntary! The survey is a one time event which should take around 10-15 minutes. If you or your family chooses to participate then changes its mind you can withdraw from the study at any time during the survey.

If you have any questions about the study please feel free to contact me.

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## Part 4 Permission from Local and Tourist

Family Name \_\_\_\_\_

Names of all participating \_\_\_\_\_

---

Title of Study: Cost Benefit Analysis of the Effects of Tourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia

The aim of this study is to help the people of Sukau to ensure that tourism in the area is sustainable both for the animals and the humans involved for the long term, while working with the Malaysian Government and tour operators. This study wants to help the community and the animals of the area to live in harmony while still allowing for tourism and development. Through this study the community of Sukau can have a voice to the Malaysian government and the International Community while allowing them to remain anonymous. This study will identify potential improvements in current tourism management strategies to the community and the government. This study intends to identify a link between tourist expectations and the Sukau community's expectations and focus them on nature conservation.

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Do you give your permission for you/your family to participate in the survey? (*please circle*)

Yes                      No

Signed Head of Household \_\_\_\_\_

Date \_\_\_\_\_

Thank you for your corporation and participation.

If you have any questions about the study please feel free to contact me.

Heather Leasor at 0196951962 or find me in Sukau. You may also write to Heather Leasor, Dept. of Archaeology and Anthropology, The Faculties, A.D. Hope Bldg 14 Ellery Crescent, Australian National University ACT 0200 Australia

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Tel.: 02-6125-2900 Fax: 02-6125-4807 Email: Human.Ethics.Officer@anu.edu.au

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My name is Heather Leasor. I am a PhD student at the Australian National University in Canberra, Australia and am conducting surveys in Sukau as part of a larger study for my PhD. The complete title of the study is Cost Benefit Analysis of the Effects of Tourism on Proboscis Monkeys (*Nasalis larvatus*) on the Lower Kinabatangan River, Sabah, Malaysia.

The aim of this study is to help the people of Sukau, Malaysia Government and tour operators to ensure that tourism in the area is sustainable both for the animals and the humans involved for the long term. To do this we also need input from the tourist who are traveling to the area. This study wants to help the community and the animals of the area to live in harmony while still allowing for tourism and development. This study will identify potential improvements in current tourism management strategies to the community and the government. This study intends to identify a link between tourist expectations and the Sukau community's expectations and focus them on nature conservation.

The Sukau community, the Malaysian government and Non Government Organizations working here will receive the results of this study. There will be no names mentioned in the information and there is no way to link any individual/family with any particular portion of the information. No names, or initials, will be kept with the survey and all information will be kept safe.

Participation is entirely voluntary! The survey is a one time event which should take around 10-15 minutes. If you or your family chooses to participate then changes its mind you can withdraw from the study at any time during the survey.

Do you give your permission for you/your family to participate in the survey? *(please circle)*

Yes

No

Initials by all parties over 18 \_\_\_\_\_

\_\_\_\_\_  
Date \_\_\_\_\_

Thank you for your corporation and participation.

If you have any questions about the study please feel free to contact me.

Heather Leasor at 0196951962 or find me in Sukau. You may also write to Heather Leasor, Dept. of Archaeology and Anthropology, The Faculties, A.D. Hope Bldg 14 Ellery Crescent, Australian National University ACT 0200 Australia

For further inquires as to ethical concerns please contact

Sylvia Deutsch, Human Ethics Officer  
Research Services Office, The Australian National University ACT 0200  
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## Part 5 Local Survey

Date \_\_\_\_\_

Masa Bermula \_\_\_\_\_

berapa ramai Orang \_\_\_\_\_

Masa Berhenti \_\_\_\_\_

### I Demographics

Pertama sekali bahagian di demographics. Ini soalan asas tentang Keluarga.

1. Sudah berapa lama tinggal di Sukau?  0-5 tahun  6-10 tahun  11-15 tahun  16-20 tahun  21-25 tahun  26-30 tahun  31 ++ tahun
2. Berapa orang tinggal di dalam rumah ini?
 

Kanak-kanak	_____
Lelaki	_____
Perempuan	_____
3. Berapa kelamin di dalam rumah ini? \_\_\_\_\_
4. Dahulu apakah pekerjaan anda? \_\_\_\_\_
5. Sekarang apakah perkerjaan anda? \_\_\_\_\_
6. Apakah taraf pendidikan dalam keluarga ini?  UPSR  SRP/PMR  SPM  STPM  Universiti
7. Berapa pendapatan sebulan dalam keluarga ini?
 

<input type="checkbox"/> 0-100	<input type="checkbox"/> 101-200	<input type="checkbox"/> 201-300	<input type="checkbox"/> 301-400	<input type="checkbox"/> 401-500
<input type="checkbox"/> 501-600	<input type="checkbox"/> 601-700	<input type="checkbox"/> 701-800	<input type="checkbox"/> 801-900	
<input type="checkbox"/> 901-1000	<input type="checkbox"/> 1001-1100	<input type="checkbox"/> 1101-1200	<input type="checkbox"/> 1201-1300	
<input type="checkbox"/> 1301-1400	<input type="checkbox"/> 1401-1500	<input type="checkbox"/> 1501-1600	<input type="checkbox"/> 1601-1700	
<input type="checkbox"/> 1701-1800	<input type="checkbox"/> 1801-1900	<input type="checkbox"/> 1901-2000	<input type="checkbox"/> 2001++	

### II Kehidupan Sebelum Pelancong/Pelancongan

Bahagian ini soalan tentang kehidupan sebelum ada pelancong atau pelancongan. Anda tahu mengenai kehidupan sebelum ada pelancong atau pelancongan? Ya / Tidak (tidak kenal pergi bahagian III). Boleh anda ingat apakah kehidupan sebelum ada banyak pelancong atau pelancongan di Kampung Sukau....ingat 10 tahun atau lebih, sebelum ini. Apakah pendapat anda mengenai soalan di bawah ini sebelum adanya pelancongan.

- |                            |                            |                            |                            |                            |                            |                            |                            |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Lebih Banyak Jawapan       |                            |                            | Sama Sekarang              |                            |                            | Kurang                     | Tidak Ada                  |
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Lebih Susah Jawapan        |                            |                            | Sama Sekarang              |                            |                            | Lebih Senang               | Tidak Ada                  |
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Lebih Mengikuti Jawapan    |                            |                            | Sama Sekarang              |                            |                            | Tidak Mengikuti            | Tidak Ada                  |
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Lebih Bersih Jawapan       |                            |                            | Sama Sekarang              |                            |                            | Lebih Kotor                | Tidak Ada                  |
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Lebih Suka Jawapan         | Suka                       |                            | Biasa Sahaja               | Tidak Suka                 | Langsung                   | Tidak Suka                 | Tidak Ada                  |

1 Lebih Baik Jawapan  
2  
3  
4 Sederhana  
5  
6  
7 Tidak Baik Tidak Ada  
8

Jawapan Tidak ada

1. Apakah pekerjaan anda sebelum ini?



2. Apakah peluang perkerjaan sebelum ada pelancongan?

1 2 3 4 5 6 7 8  
 Lebih Banyak T.A.J. Sama Sekarang Kurang

3. Pada pendapat kamu berapa ramaikah orang ketagih arak sebelum ada pelancongan?

1 2 3 4 5 6 7 8  
 Lebih Banyak T.A.J. Sama Sekarang Kurang

4. Sebelum adanya pelancongan pengangkutan di sini

1 2 3 4 5 6 7 8  
 Lebih Susah Sama Sekarang Lebih Senang TAJ

5. Apakah budaya atau tradisi sebelum ada pelancongan di sini

1 2 3 4 5 6 7 8  
 Lebih Mengikuti TAJ Sama Sekarang Tidak Mengikuti

6. Sebelum ada pelancongan sampah di sini

1 2 3 4 5 6 7 8  
 Lebih Banyak T.A.J. Sama Sekarang Kurang

7. Sebelum ada pelancongan peraturan di sini

1 2 3 4 5 6 7 8  
 Lebih Banyak T.A.J. Sama Sekarang Kurang

8. Sebelum ada pelancongan hari demi hari berapa banyak bot di sungai

1 2 3 4 5 6 7 8  
 Lebih Banyak T.A.J. Sama Sekarang Kurang

9. Sebelum ada pelancongan berapa banyak binatang-binatang

1 2 3 4 5 6 7 8  
 Lebih Banyak T.A.J. Sama Sekarang Kurang

10. Sebelum ada pelancongan berapa banyak bengkatan

1 2 3 4 5 6 7 8  
 Lebih Banyak T.A.J. Sama Sekarang Kurang

11. Sebelum ada pelancongan berapa banyak ikan/udang

1 2 3 4 5 6 7 8  
 Lebih Banyak T.A.J. Sama Sekarang Kurang

12. Apakah sumber air sebelum ada pelancongan

Sungai Hujan Lain-lain

13. Minum air (di atas)

1 2 3 4 5 6 7 8  
 Lebih Bersih Sama Sekarang Lebih Kotor TAJ

Sebelum ada pelancongan kehidupan ada gangguan dari segi

14. ombak bila pergi bernelayan  1  2  3  4  5  6  7  8  
 Lebih Banyak T.A.J. Sama Sekarang Kurang
15. fotografi  1  2  3  4  5  6  7  8  
 Lebih Banyak T.A.J. Sama Sekarang Kurang
16. pencemaran  1  2  3  4  5  6  7  8  
 Lebih Banyak T.A.J. Sama Sekarang Kurang
17. bunyi bising  1  2  3  4  5  6  7  8  
 Lebih Banyak T.A.J. Sama Sekarang Kurang
18. undang-undang bernelayan  1  2  3  4  5  6  7  8  
 Lebih Banyak T.A.J. Sama Sekarang Kurang
19. bubu atau pukut rosak  1  2  3  4  5  6  7  8  
 Lebih Banyak T.A.J. Sama Sekarang Kurang
20. Sebelum ada pelancongan berapa pemuda-pemudi keluar dari kampung mencari pekerjaan.  1  2  3  4  5  6  7  8  
 Lebih Banyak T.A.J. Sama Sekarang Kurang
21. Apa perasaan kamu apabila pemuda-pemudi keluar dari kampung ini  1  2  3  4  5  6  7  8  
 Lebih Suka Suka Biasa Sahaja Langsung Tidak Suka TAJ
22. Apakah pendapat anda keseluruhan perubahan kehidupan sebelum ada pelancongan  1  2  3  4  5  6  7  8  
 Lebih Suka Suka Biasa Sahaja Langsung Tidak Suka TAJ



TAJ

III Pelancongan

Bahagian ini soalan tentang Pelancongan. Bukan pelancong ini pelancongan sahaja ada bahagian lain untuk Pelancong. Apakah pendapat anda mengenai soalan di bawah ini.

- 1  2  3  4  5  6  7  8  
 Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah Tidak Ada Jawapan
- 1  2  3  4  5  6  7  8  
 Lebih Banyak Sama Sekarang Kurang Tidak Ada Jawapan



Tidak ada

Jawapan

1. Adakah keluarga anda membuat perjanjian dengan agensi pelancongan? (Tidak pergi Soalan 3)  Ya  Tidak
2. Setuju Keluarga anda [A] sewa tanah [B] beli tanah [C] lain-lain (apa?)
3. Dahulu adakah ahli keluarga ini bekerja dengan agensi pelancongan (Tidak pergi Soalan 5)  Ya  Tidak

4. Apa perkerjaan

5. Sekarang adakah ahli keluarga ini bekerja dengan agensi pelancongan (Tidak pergi Soalan 7)

Ya  Tidak

6. Apa perkerjaan

7. Adakah agensi pelancongan salah satu sumber pendapatan penduduk kampung

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

8. Adakah agensi pelancongan bertujuan untuk pelancong mengenal kampung ini

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

9. Adakah peluang perkerjaan dengan agensi pelancongan

Ada  Tidak Ada

10. Berapa banyak agensi pelancongan sepatutnya di sini

1  2  3  4  5  6  7  8

Lebih Banyak T.A.J. Sama Sekarang Kurang

11. Apakah agensi pelancongan perlu menunjuk ajar kepada pelancong, mengenai budaya dan adat resam orang sungai di Sukau

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

12. Perlukah agensi pelancongan memberi sumbangan kepada penduduk kampung Sukau?

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

13. Agensi pelancongan membeli dengan harga berpatutan untuk ikan/udang

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

14. Agensi pelancongan menyewa harga berpatutan untuk sewa tanah

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

15. Agensi pelancongan membayar harga berpatutan untuk gaji

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

16. Dari keseluruhan soalan ini apakah perasaan tentang agensi pelancongan



TAJ

#### IV Pelancong

Ada soalan tentang Pelancong. Bukan pelancongan ini pelancong sahaja ada bahagian lain untuk Pelancongan. Apakah pendapat anda mengenai soalan di bawah ini.

1  2  3  4  5  6  7  8  
Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah Tidak Ada  
Jawapan

1  2  3  4  5  6  7  8

Banyak Peluang Kadang-kadang Biasa Sahaja Tidak Ada Peluang Langsung Tidak Ada Peluang Tidak Ada Jawapan

1 Memang Patut Jawapan    
 2 Perlu    
 3    
 4 Biasa Sahaja    
 5 Tidak Perlu    
 6 Langsung Tidak    
 7 Tidak Ada    
 8



Tidak ada Jawapan

1. Pelancong adalah salah satu sumber pendapatan di kampung Sukau?

1   2   3   4   5   6   7   8

Bersetuju     Setuju     Biasa Sahaja     Tidak Setuju     Membantah     TAJ

2. Kita dapat mengenal sesuatu budaya dengan adanya pelancong?

1   2   3   4   5   6   7   8

Bersetuju     Setuju     Biasa Sahaja     Tidak Setuju     Membantah     TAJ

3. Adakah anda berpeluang berinteraksi dengan pelancong?

1   2   3   4   5   6   7   8

Banyak Peluang     Biasa Sahaja     Langsung Tidak Ada Peluang     TAJ

4. Pelancong dapat memperkenalkan kampung kita di serata dunia

1   2   3   4   5   6   7   8

Bersetuju     Setuju     Biasa Sahaja     Tidak Setuju     Membantah     TAJ

5. Perlukah pelancong mengikuti budaya dan adat resam kita

1   2   3   4   5   6   7   8

Memang Patut     Perlu     Biasa Sahaja     Tidak Perlu     Langsung Tidak TAJ

Mengenai budaya pelancong....

6. pakaian



TAJ

7. kesopanan



TAJ

8. kesopanan fotografi



TAJ

9. bunyi bising di pelancong



TAJ

10. membuang sampah di tempat yang betul



TAJ

11. gangguan pelancong



TAJ

12. Keseluruhan ada pelancong di sini

1   2   3   4   5   6   7   8

Bersetuju     Setuju     Biasa Sahaja     Tidak Setuju     Membantah     TAJ

Apakah anda mahu mengenai pelancong



13. Meminta izin sebelum gambar

TAJ



14. Berpakaian kemas

TAJ

15. Mengikuti budaya dan adat resam di sini



TAJ

16. Masuk ke pertengahan kampung



TAJ

17. Tidak masuk ke pertengahan kampung



TAJ

18. Masuk hutan



TAJ

V Kehidupan selepas pelancong/pelancongan

Ada soalan tentang kehidupan selepas ada pelancong atau pelancongan. Apakah pendapat anda mengenai soalan di bawah ini selepas adanya pelancongan.

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Bersetuju	Setuju	Biasa Sahaja	Tidak Setuju	Membantah	Tidak Ada Jawapan		
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Lebih Banyak Jawapan		Sama Sekarang			Kurang	Tidak Ada	
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Lebih Susah	Susah	Sama Sekarang	Senang	Lebih Senang	Tidak Ada Jawapan		
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Lebih Mengikuti	Mengikuti	Sama Sekarang		Tidak Mengikuti	Tidak Ada Jawapan		
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Lebih Bersih	Bersih	Sama Sekarang	Kotor	Lebih Kotor	Tidak Ada Jawapan		
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Lebih Baik Jawapan	Baik	Sederhana	Tidak Baik	Langsung Tidak Baik	Tidak Ada		



Tidak ada Jawapan

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
1. Apakah kehidupan selepas pelancong-pelancongan ada perubahan dari segi pendapatan?	Bersetuju	Setuju	Biasa Sahaja	Tidak Setuju	Membantah	TAJ	
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
2. Apakah peluang pekerjaan selepas ada pelancongan?	Lebih Banyak T.A.J.		Sama Sekarang			Kurang	
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
3. Pada pendapat kamu berapa ramaikah orang ketagih arak selepas ada pelancongan?	Lebih Banyak T.A.J.		Sama Sekarang			Kurang	
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
4. Adakah selepas adanya pelancongan pengangkutan di sini	Lebih Susah		Sama Sekarang			Lebih Senang	TAJ
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
5. Apakah budaya atau tradisi selepas ada pelancongan di sini							

	Lebih Mengikuti TAJ	Sama Sekarang	Tidak Mengikuti
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8		
6. Selepas ada pelancongan sampah di sini	Lebih Banyak T.A.J.	Sama Sekarang	Kurang
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8		
7. Selepas ada pelancongan peraturan di sini	Lebih Banyak T.A.J.	Sama Sekarang	Kurang
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8		
8. Selepas ada pelancongan hari demi hari berapa banyak bot di sungai	Lebih Banyak T.A.J.	Sama Sekarang	Kurang
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8		
9. Selepas ada pelancongan berapa banyak binatang-binatang	Lebih Banyak T.A.J.	Sama Sekarang	Kurang
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8		
10. Selepas ada pelancongan berapa banyak bengkatan	Lebih Banyak T.A.J.	Sama Sekarang	Kurang
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8		
11. Selepas ada pelancongan berapa banyak ikan/udang	Lebih Banyak T.A.J.	Sama Sekarang	Kurang
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8		
12. Apakah sumber air selepas ada pelancongan	<input type="checkbox"/> Sungai	<input type="checkbox"/> Hujan	<input type="checkbox"/> Lain-lain
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8		
13. Minum air (di atas)	Lebih Bersih	Sama Sekarang	Lebih Kotor TAJ
Selepas ada pelancongan kehidupan ada gangguan dari segi			
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8		
14. ombak bila pergi bernelayan	Lebih Banyak T.A.J.	Sama Sekarang	Kurang
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8		
15. fotografi	Lebih Banyak T.A.J.	Sama Sekarang	Kurang
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8		
16. pencemaran	Lebih Banyak T.A.J.	Sama Sekarang	Kurang
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8		
17. bunyi bising	Lebih Banyak T.A.J.	Sama Sekarang	Kurang
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8		
18. undang-undang bernelayan	Lebih Banyak T.A.J.	Sama Sekarang	Kurang
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8		
19. bulu atau pukot rosak	Lebih Banyak T.A.J.	Sama Sekarang	Kurang
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8		
20. Selepas ada pelancong berapa pemuda- pemudi keluar dari kampung mencari perkerjaan.			
	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8		

Lebih Banyak  
T.A.J.

Sama Sekarang

Kurang

21. Apakah perasaan kamu apabila pemuda-pemudi keluar dari kampung



TAJ

1  2  3  4  5  6  7  8

22. Apakah pendapat anda keseluruhan perubahan kehidupan selepas ada pelancongan

Lebih Baik

Sederhana

Langsung Tidak Baik

TAJ



TAJ

23 Keseluruhan perubahan budaya



TAJ

24. Perubahan kampung



TAJ

25. Keseluruhan perubahan

#### VI Estet Kelapa Sawit

Bahagian ini soalan tentang Estet Kelapa Sawit. Apakah pendapat anda mengenai soalan di bawah ini.

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah Tidak Ada  
Jawapan

1  2  3  4  5  6  7  8

Lebih Banyak Sama Sekarang Kurang Tidak Ada  
Jawapan



Tidak ada Jawapan

1. Adakah keluarga anda membuat perjanjian dengan Estet Kelapa Sawit? (Tidak pergi Soalan 3)

Ya  Tidak

2. Setuju Keluarga anda

[A] sewa tanah  
[B] di jual tanah  
[C] lain-lain (apa?)

3. Dahulu adakah ahli keluarga ini bekerja dengan Estet Kelapa Sawit? (Tidak pergi Soalan 5)

Ya  Tidak

4. Apakah perkerjaan

5. Sekarang adakah ahli keluarga ini bekerja dengan Estet Kelapa Sawit? (Tidak pergi Soalan 7)

Ya  Tidak

6. Apakah perkerjaan



7. Estet Kelapa Sawit sumber pendapatan penduduk kampung Sukau

1    2    3    4    5    6    7    8

Bersetuju   Setuju   Biasa Sahaja   Tidak Setuju   Membantah TAJ

8. Adakah peluang pekerjaan dengan Estet Kelapa Sawit

1    2    3    4    5    6    7    8

Lebih Banyak T.A.J.   Sama Sekarang   Kurang

9. Berapa banyak Estet Kelapa Sawit sepatutnya di sini

1    2    3    4    5    6    7    8

Lebih Banyak T.A.J.   Sama Sekarang   Kurang

10. Perlukah Estet Kelapa Sawit memberi sumbangan kepada penduduk kampung Sukau?

1    2    3    4    5    6    7    8

Bersetuju   Setuju   Biasa Sahaja   Tidak Setuju   Membantah TAJ

11. Adakah Estet Kelapa Sawit membeli harga berpatutan untuk ikan/udang

1    2    3    4    5    6    7    8

Bersetuju   Setuju   Biasa Sahaja   Tidak Setuju   Membantah TAJ

12. Adakah Estet Kelapa Sawit menyewa tanah dengan harga berpatutan

1    2    3    4    5    6    7    8

Bersetuju   Setuju   Biasa Sahaja   Tidak Setuju   Membantah TAJ

13. Adakah Estet Kelapa Sawit membayar gaji berpatutan

1    2    3    4    5    6    7    8

Bersetuju   Setuju   Biasa Sahaja   Tidak Setuju   Membantah TAJ

14. Keseluruhan ada rasa dengan Estet Kelapa Sawit



TAJ

### VII Jabatan Hidupan Liar

Bahagian ini soalan tentang Jabatan Hidupan Liar. Apakah pendapat anda mengenai soalan di bawah ini.

1    2    3    4    5    6    7    8

Bersetuju   Setuju   Biasa Sahaja   Tidak Setuju   Membantah   Tidak Ada Jawapan



Tidak ada Jawapan

1 Adakah tugas JHL untuk mengawal binatang-binatang

1    2    3    4    5    6    7    8

Bersetuju   Setuju   Biasa Sahaja   Tidak Setuju   Membantah TAJ

2. Adakah tugas JHL untuk mengawal semua aktiviti dalam sanktuari

1    2    3    4    5    6    7    8

Bersetuju   Setuju   Biasa Sahaja   Tidak Setuju   Membantah TAJ

3. Adakah tugas JHL untuk mengawal aktiviti Pelancong dalam hutan

1    2    3    4    5    6    7    8

Bersetuju   Setuju   Biasa Sahaja   Tidak Setuju   Membantah TAJ

4. Adakah tugas JHL untuk mengawal aktiviti memburu

1    2    3    4    5    6    7    8

Bersetuju   Setuju   Biasa Sahaja   Tidak Setuju   Membantah TAJ

5. Adakah tugas JHL untuk mengawal penebangan pokok

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

6. Adakah tugas JHL untuk mengawal memetik buah di sanktuari

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

7. Adakah tugas JHL untuk memberhentikan aktiviti memburu

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

8. Adakah tugas JHL untuk memberhentikan aktiviti penebangan pokok

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

9. Adakah tugas JHL untuk memberhentikan aktiviti memetik buah di sanktuari

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

10. Adakah tugas JHL untuk mengawasi kebun-kebun kita daripada di binasa oleh binatang liar

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

11. Adakah tugas JHL untuk mengawal binatang-binatang supaya tidak pupus

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

12. Adakah kita perlu berkerjasama dengan JHL untuk mengawal binatang-binatang agar tidak pupus

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

13. Adakah kita perlu mengikuti undang-undang JHL

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

14. Adakah JHL mesti ada di sini

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

15. Adakah JHL sekarang membuat kerja yang sepatutnya

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

16. Adakah kamu bermasalah dengan JHL



TAJ

17. Adakah perlu kebenaran daripada JHL sebelum pergi ke sanktuari



TAJ

VIII Binatang-Binatang

Bahagian ini soalan tentang Binatang-binatang di hutan. Apakah pendapat anda mengenai soalan di bawah ini.

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Banyak Kenal Jawapan	Kenal		Biasa Sahaja	Tidak Kenal	Langsung	Tidak Kenal	Tidak Ada
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Lebih Banyak Jawapan	Banyak		Biasa Sahaja	Tidak Ada Banyak	Langsung	Tidak Ada	Tidak Ada
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Bersetuju Jawapan	Setuju		Biasa Sahaja	Tidak Setuju	Membantah	Tidak Ada	



Tidak ada

Jawapan

	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
1. Anda kenal binatang-binatang di sini	Banyak Kenal	Kenal	Biasa Sahaja	Tidak Kenal	Langsung	Tidak Kenal	TAJ	



2. Adakah kamu suka binatang-binatang di sini

TAJ

	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
3. Adakah kamu kenal bangkatan	Banyak Kenal	Kenal	Biasa Sahaja	Tidak Kenal	Langsung	Tidak Kenal	TAJ	



4. Adakah kamu suka bangkatan

TAJ

	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
5. Adakah kamu kenal ikan sungai	Banyak Kenal	Kenal	Biasa Sahaja	Tidak Kenal	Langsung	Tidak Kenal	TAJ	



6. Adakah kamu suka ikan sungai

TAJ

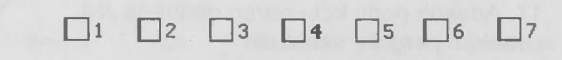
	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
7. Adakah kamu kenal burung di sini	Banyak Kenal	Kenal	Biasa Sahaja	Tidak Kenal	Langsung	Tidak Kenal	TAJ	



8. Adakah kamu suka burung di sini

TAJ

	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
9. Adakah cerita dongeng mengenai binatang di sini	Banyak Kenal	Kenal	Biasa Sahaja	Tidak Kenal	Langsung	Tidak Kenal	TAJ	



10. Adakah cerita mengenai bangkatan di sini

Lebih Banyak      Biasa Sahaja      Langsung Tidak Ada TAJ

11. Adakah bangkatan mengganggu kehidupan penduduk kampung

1  2  3  4  5  6  7  8

Lebih Banyak

Biasa Sahaja

Langsung Tidak Ada TAJ

12. Adakah bangkatan salah satu tarikan pelancong di sini

1  2  3  4  5  6  7  8

Bersetuju

Setuju

Biasa Sahaja

Tidak Setuju

Membantah TAJ

13. Adakah bangkatan salah satu sumber pendapatan keluarga ini

1  2  3  4  5  6  7  8

Bersetuju

Setuju

Biasa Sahaja

Tidak Setuju

Membantah TAJ

14. Adakah ikan/udang salah satu sumber pendapatan keluarga ini

1  2  3  4  5  6  7  8

Bersetuju

Setuju

Biasa Sahaja

Tidak Setuju

Membantah TAJ

14. Adakah ikan/udang salah satu sumber makanan keluarga ini

1  2  3  4  5  6  7  8

Bersetuju

Setuju

Biasa Sahaja

Tidak Setuju

Membantah TAJ

15. Adakah kamu mahu kajian kenapa ikan/udang hampir pupus

1  2  3  4  5  6  7  8

Bersetuju

Setuju

Biasa Sahaja

Tidak Setuju

Membantah TAJ

16. Apakah pendapat kamu kenapa ikan/udang hampir pupus

17. Apakah kamu mahu lebih banyak kajian mengenai bangkatan

1  2  3  4  5  6  7  8

Bersetuju

Setuju

Biasa Sahaja

Tidak Setuju

Membantah TAJ

18. Apakah kamu mahu lebih banyak kajian mengenai orang utan

1  2  3  4  5  6  7  8

Bersetuju

Setuju

Biasa Sahaja

Tidak Setuju

Membantah TAJ

19. Apakah kamu mahu lebih banyak kajian mengenai binatang-binatang

1  2  3  4  5  6  7  8

Bersetuju

Setuju

Biasa Sahaja

Tidak Setuju

Membantah TAJ

### IX Hutan/ Sanktuari

Bahagian ini soalan tentang Hutan dan sanktuari. Apakah pendapat anda mengenai soalan di bawah ini.

1  2  3  4  5  6  7  8

Lebih Suka Jawapan Suka Biasa Sahaja Tidak Suka Langsung Tidak Suka Tidak Ada

1  2  3  4  5  6  7  8

Bersetuju Jawapan Setuju Biasa Sahaja Tidak Setuju Membantah Tidak Ada



Tidak ada Jawapan

1. Adakah kamu suka adanya hutan

1  2  3  4  5  6  7  8

Lebih Suka

Suka

Biasa Sahaja

Langsung Tidak Suka TAJ

2. Adakah kamu suka hutan tapi tidak perlukan sanktuari

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

3. Adakah hutan sumber pendapatan keluarga ini

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

di jual  di bubu  di rumah  tradisi  lain-lain

4. Seperti rotan untuk

di jual  membina rumah  perladangan  lain-lain

5. Kayu balak untuk

di jual  sendiri  lain-lain

6. Buah-buah untuk

di jual  sendiri  lain-lain

7. Ubat tradisi untuk

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

8. Adakah kamu mengenal sanktuari

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

9. Adakah kamu mahu mengekalkan hutan di sini untuk generasi akan datang

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

10. Sekiranya tidak ada hutan masalah akan timbul seperti angin kuat, gempa bumi, dan lain lain

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

11. Adakah kamu mahu mengekalkan hutan di sini untuk tarikan pelancong



TAJ

12. Adakah hutan penting bagi segala kehidupan

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

13. Adakah kita perlukan pembangunan seperti perladangan dan kita tidak perlukan sanktuari

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

14. Adakah kita perlukan sanktuari untuk melindungi binatang-binatang



TAJ

15. Adakah kamu suka dengan sanktuari

1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

16. Adakah kamu setuju adanya sanktuari

1  2  3  4  5  6  7  8

17. Adakah kamu tahu peraturan dalam sanktuari

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ



TAJ

18. Adakah santuari penting bagi segala kehidupan

1  2  3  4  5  6  7  8

19. Adakah kamu rasa pengambilan sumber santuari hendaklah terkawal supaya tidak pupus

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah TAJ

**X Menebang Pokok, Memetik Buah, Memburu**

Bahagian ini soalan tentang menebang pokok, memetik buah, menarik rotan, memetik ubat tradisi dan memburu. Apakah pendapat anda mengenai soalan di bawah ini.

1  2  3  4  5  6  7  8

Lebih Banyak Banyak Biasa Sahaja Tidak Ada Banyak Langsung Tidak Ada Tidak Ada Jawapan  
 1  2  3  4  5  6  7  8

Selalu 1 Kali Setahun Tidak Pernah Tidak Ada Jawapan  
 1  2  3  4  5  6  7  8

Bersetuju Setuju Biasa Sahaja Tidak Setuju Membantah Tidak Ada Jawapan



Tidak ada Jawapan

1  2  3  4  5  6  7  8

1. Adakah keluarga kamu menjalani aktiviti penebangan pokok

Lebih Banyak Biasa Sahaja Langsung Tidak Ada TAJ

di jual  membina rumah  perladangan  lain-lain

2. Adakah keluarga ini menebang pokok untuk

1  2  3  4  5  6  7  8

3. Adakah keluarga kamu menjalani aktiviti mencari rotan

Lebih Banyak Biasa Sahaja Langsung Tidak Ada TAJ

di jual  di bubu  di rumah  tradisi  lain-lain

4. Adakah keluarga ini perlu mencari rotan untuk

1  2  3  4  5  6  7  8

5. Adakah keluarga ini menjalani aktiviti memetik buah-buah hutan

Lebih Banyak Biasa Sahaja Langsung Tidak Ada TAJ

di jual  sendiri  tradisi  lain-lain

6. Adakah keluarga ini perlu memetik buah buah hutan untuk

1  2  3  4  5  6  7  8

7. Adakah keluarga ini menjalani aktiviti memburu

Lebih Banyak Biasa Sahaja Langsung Tidak Ada TAJ

di jual  sendiri  tradisis  kenduri  lain-lain

8. Adakah keluarga ini perlu memburu untuk

Kekerapan keluarga ini

1  2  3  4  5  6  7  8

9. Menebang pokok

Selalu  1  2  3  4  5  6  7  8  
1 Kali Setahun  1  2  3  4  5  6  7  8  
Tidak Pernah TAJ  1  2  3  4  5  6  7  8

10. Mencari rotan

Selalu  1  2  3  4  5  6  7  8  
1 Kali Setahun  1  2  3  4  5  6  7  8  
Tidak Pernah TAJ  1  2  3  4  5  6  7  8

11. Memetik buah

Selalu  1  2  3  4  5  6  7  8  
1 Kali Setahun  1  2  3  4  5  6  7  8  
Tidak Pernah TAJ  1  2  3  4  5  6  7  8

12. Mengambil ubat tradisi

Selalu  1  2  3  4  5  6  7  8  
1 Kali Setahun  1  2  3  4  5  6  7  8  
Tidak Pernah TAJ  1  2  3  4  5  6  7  8

13. Memburu

Selalu  1  2  3  4  5  6  7  8  
1 Kali Setahun  1  2  3  4  5  6  7  8  
Tidak Pernah TAJ  1  2  3  4  5  6  7  8

Berapa kali keluarga ini pergi sanktuari untuk

1  2  3  4  5  6  7  8

14. Menebang pokok

Selalu  1  2  3  4  5  6  7  8  
1 Kali Setahun  1  2  3  4  5  6  7  8  
Tidak Pernah TAJ  1  2  3  4  5  6  7  8

15. Mencari rotan

Selalu  1  2  3  4  5  6  7  8  
1 Kali Setahun  1  2  3  4  5  6  7  8  
Tidak Pernah TAJ  1  2  3  4  5  6  7  8

16. Memetik buah

Selalu  1  2  3  4  5  6  7  8  
1 Kali Setahun  1  2  3  4  5  6  7  8  
Tidak Pernah TAJ  1  2  3  4  5  6  7  8

17. Mengambil ubat tradisi

Selalu  1  2  3  4  5  6  7  8  
1 Kali Setahun  1  2  3  4  5  6  7  8  
Tidak Pernah TAJ  1  2  3  4  5  6  7  8

18. Memburu

Selalu  1  2  3  4  5  6  7  8  
1 Kali Setahun  1  2  3  4  5  6  7  8  
Tidak Pernah TAJ  1  2  3  4  5  6  7  8

Adakah kita perlu kebenaran sebelum pergi sanktuari untuk

8

19. Menebang pokok

8

TAJ

20. Mencari rotan

8

TAJ

21. Memetik buah

8

TAJ

22. Mengambil ubat tradisi

8

TAJ

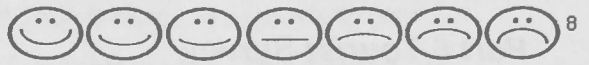
23. Memburu

8

TAJ

Adakah kita perlu kebenaran untuk berapa banyak bila pergi sanktuari untuk

24. Menebang pokok



TAJ

25. Mencari rotan



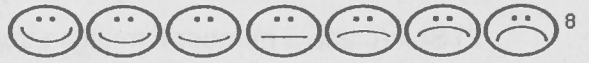
TAJ

26. Memetik buah



TAJ

27. Memetik ubat tradisi



TAJ

28. Memburu



TAJ



## Part 6 Tourist Survey

Now that I have permission first I would like to start with some demographic questions. Please answer all you feel comfortable answering.

### Demographics

1) Number of individuals in your party \_\_\_\_\_

2) Sex (place a number if multiple travellers, check one if individual.)

	Male
--	------

	Female
--	--------

3) Age (check all that apply)

	0-5		16-20		31-35		46-50		61-65
	6-10		21-25		36-40		51-55		66-70
	11-15		26-30		41-45		56-60		71+

4) Nationality(ies) (please list all)

---



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5) Highest level of education obtained by any member of the family travelling here. (check only one)

	Primary (elementary/infant/primary)
	Secondary (Junior High or High School)
	University or College
	MA/MS/MPhil
	PhD/MD/ or higher
	Other _____

6) Profession(s) (list as many as desired)

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7) Is this your first visit to Sukau? 

	Yes
--	-----

	No
--	----

(If yes got to question 9)

8) IF no how many times previously visited? \_\_\_\_\_

9) Duration of stay

	1 day
	2 days 1 night
	3 days 2 nights
	4 days 3 nights
	More please indicate length _____

Now I would like to move on and find your feelings in regards to your lodging, staff/host family, amenities, food and the like. This section will consist of questions on which you tick an option from a list or choose your level of satisfaction along a scale of adjectives.

**Accommodation**

10) Which lodge did you stay at? (check one)

- Sukau Tomanggong B & B
- Sukau Riverview Lodge
- Sukau Rainforest Lodge
- Sukau Proboscis Lodge
- Wildlife Expeditions Sdn Bhd
- Sri Menanggal Cabin
- S.I. Tours
- Home stay program

11) What activities did you partake in? (check all that apply)

- River cruise morning
- River cruise afternoon
- River cruise night (crocodile/firefly spotting)
- Ox bow lake tour
- Cultural tour
- Trip to Sukau
- Cultural cooking program
- Traditional fishing program
- Traditional music program
- Traditional dance program
- Forest walk
- Cave trip
- Night forest walk
- Orang-utan viewing
- Watching video of area or wildlife
- Other

12) How would you rate your **Room** on the following

Clean					Dirty	No Comment
Difficult					Accessible	No Comment
Inviting					Un-appealing	No Comment
Ethnic					Western	No Comment
Buggy					Bug free	No Comment
Noisy					Quiet	No Comment
Secure					Un-safe	No Comment

13) How would you rate your **Lodge Facilities/ Home stay house**

Crowded						Spacious	No Comment
Ethnic						Western	No Comment
Clean						Dirty	No Comment
Inviting						Un-appealing	No Comment
Reassuring						Unsettling	No Comment
Accessible						Difficult	No Comment
Noisy						Quiet	No Comment
Secure						Un-safe	No Comment

14) How would you rate the **Waste Removal**

Good						Bad	No Comment
------	--	--	--	--	--	-----	------------

15) How would you rate the **Water in the room**

Clean						Dirty	No Comment
-------	--	--	--	--	--	-------	------------

16) How would you rate the **Toilet Facilities** /home stay

Clean						Dirty	No Comment
Accessible						Difficult	No Comment

17) How would you rate the **Food**

Abundant (plenty)						Scarce (not enough)	No Comment
Tasty						Un-palatable	No Comment
Ethnic						Western	No Comment
Prompt						Slow	No Comment

18) Transport taken to Sukau (Check the method taken)

bus       boat       car       other \_\_\_\_\_

19) The above method was

Bumpy						Smooth	No Comment
Boring						Interesting	No Comment
Dirty						Clean	No Comment
Crowded						Roomy	No Comment
Painful/uncomfortable						Pleasant/Comfortable	No Comment
Noisy						Quiet	No Comment

Safe						Un safe	No Comment
------	--	--	--	--	--	---------	---------------

20) Was a River Cruise  Yes  No taken?

(If no please go to question 24)

21) During the River Cruise Boat how many people in your Boat \_\_\_\_\_

22) During the River Cruise about how many boats did you see  
\_\_\_\_\_

23) The **River Cruise** was

Bumpy						Smooth	No Comment
Boring						Interesting	
Dirty						Clean	
Crowded						Roomy	
Painful						Comfortable	
Noisy						Quiet	
Scenic						Monotonous	
Safe						Un safe	

24) How would you rate your **Staff / Host Family**

Selfish						Selfless	No Comment
Active						Passive	No Comment
Difficult						Easy	No Comment
Ethical						Corrupt	No Comment
Helpful						Un-helpful	No Comment
Patient						Pushy	No Comment
Spoke your language						Inadequate Language skills	No Comment
Polite						Rude	No Comment
Prompt						Slow	No Comment
Knowledgeable						Un- knowledgeable	No Comment

The next section regards what educational opportunities, information or interpretive materials were available to you as well as your satisfaction with them. Please check all that apply and feel free to fill in extras on the list and check the appropriate rating on scales and lists of adjectives.

**Education/Information opportunities**

25) Did your lodge offer any education or interpretive materials

<input type="checkbox"/>	Guide books
<input type="checkbox"/>	Video
<input type="checkbox"/>	Sign boards
<input type="checkbox"/>	Talks
<input type="checkbox"/>	History information
<input type="checkbox"/>	Pamphlets
<input type="checkbox"/>	Information on research in the area
<input type="checkbox"/>	Other please specify

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26) Were there opportunities to purchase any of the above?

<input type="checkbox"/>	Yes
--------------------------	-----

<input type="checkbox"/>	No
--------------------------	----

27) If any of the above were not on offer which would you like to see on offer?

<input type="checkbox"/>	Guide books
<input type="checkbox"/>	Video
<input type="checkbox"/>	Sign boards
<input type="checkbox"/>	Talks
<input type="checkbox"/>	History information
<input type="checkbox"/>	Pamphlets
<input type="checkbox"/>	Information on research in the area
<input type="checkbox"/>	Other please specify

---



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28) What was your knowledge of the area before you came?

Expert	Good	Some	Average	Little	Poor	None	No Comment
--------	------	------	---------	--------	------	------	------------

29) Please rate your **Guide** on the following

Selfish						Selfless	No Comment
Active						Passive	No Comment
Difficult						Easy	No Comment
Ethical						Corrupt	No Comment
Helpful						Un-helpful	No Comment
Patient						Pushy	No Comment
Spoke your language						Inadequate Language skills	No Comment
Polite						Rude	No Comment
Prompt						Slow	No Comment
Knowledgeable						Un-knowledgeable	No Comment
Inventive						Un-imaginative	No Comment

30) What was your knowledge at the end of your stay?

Expert	Good	Some	Average	Little	Poor	None	No Comment
--------	------	------	---------	--------	------	------	------------

*This section deals with your prior conceptions of the culture of the area. It also deals with your interactions and post contact views regarding culture and cultural experiences. Again please check the appropriate level on the scales.*

### Culture

31) Do you feel your visit impacts the culture of the local people?

Long Lasting	Moderate impact	Some impact	Neutral	Brief impact	Little impact	No impact	No comment
--------------	-----------------	-------------	---------	--------------	---------------	-----------	------------

32) How much interaction did you have with local people outside the lodge?

In depth conversation	Moderate interaction	Some interaction	neutral	Little interaction	Saw from the boat	No interaction	No comment
-----------------------	----------------------	------------------	---------	--------------------	-------------------	----------------	------------

33) If home stay how much interaction did you have with your host family?

In depth conversation	Some interaction	Moderate interaction	neutral	Little interaction	Saw briefly	No interaction	No comment
-----------------------	------------------	----------------------	---------	--------------------	-------------	----------------	------------

34) Do you feel your visit benefited the local community?

Extreme positive benefit	Moderately benefit community	Benefit community	No benefit or detriment	Moderately detrimental to community	Detrimental to community	Extremely detrimental to community	No comment
--------------------------	------------------------------	-------------------	-------------------------	-------------------------------------	--------------------------	------------------------------------	------------

35) Amount of interaction with the local community desired?

In depth conversation	Some interaction	Moderate interaction (see cultural event)	neutral	Little interaction	See from boat	No interaction	No comment
-----------------------	------------------	---	---------	--------------------	---------------	----------------	------------

36) How did you expect the local culture to be on the following criteria

Basic						Modern	No expectation
No English						Fluent English	No expectation
No TV						Surround sound wide screen TV	No expectation
No electricity						Consistent electricity	No expectation
Dress traditional						Dress western	No expectation
No indoor plumbing						Full plumbing	No expectation
Subsistence living						Having corporate business	No expectation
Heads hanging at house						Western house décor	No expectation

*Wildlife is a very important part of both your experience and the livelihood of Sukau. This section deals with wildlife you may have seen or interacted with. Please check all that apply in lists or your satisfaction along designated scales.*

### Wildlife

37) Did you expect to see wildlife on this trip?  Yes  No

38) If yes which of the following did you expect to see on this trip.

<input type="checkbox"/>	Rare birds
<input type="checkbox"/>	Birds
<input type="checkbox"/>	Elephants

	Rhinoceros
	Orang-utan
	Proboscis monkey
	Monkeys in general
	Leopard or civet cat
	Sun bear
	River otter
	Fish
	Crocodile
	Monitor lizard
	Snakes
	Other Please list

39) Did you actually view any wildlife on this trip?  Yes  No

40) If yes please tick all the animals that you saw add names as necessary.

	Rare birds
	Birds
	Elephants
	Rhinoceros
	Orang-utan
	Proboscis monkey
	Silver leaf monkey
	Pig tail macaque
	Long tail macaque
	Marron leaf monkey
	Leopard or civet cat
	Sun bear
	River otter
	Fish
	Crocodile
	Monitor lizard
	Snakes
	Other please list

41) What was your expected interaction with wildlife?

Holding touching	View within 1-2m (3-6 ft)	View within 3-6m (9-19 ft)	View from 7-10m (20-33ft)	View from 11-16+ (36-53ft)	possibly catch a view from far way	No interaction	No expectation	No comment
------------------	---------------------------	----------------------------	---------------------------	----------------------------	------------------------------------	----------------	----------------	------------

42) What was your knowledge level of the animals of the area before your visit?

Expert	Good	Some	Average	Little	Poor	No Knowledge	Didn't care
--------	------	------	---------	--------	------	--------------	-------------

43) Did this knowledge change after your visit here?

Much more	Some more	Little more	More	No change	No comment
-----------	-----------	-------------	------	-----------	------------



44) How easy did you find wildlife viewing?

Very easy	Moderately easy	Easy	Neutral	Difficult	moderately difficult	Extremely difficult	No opinion
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

45) What was your actual interaction with wildlife?

Holding touching	View within 1-2m (3-6 ft)	View within 3-6m (9-19 ft)	View from 7-10m (20-33ft)	View from 11-16+ (36-53ft)	Caught a view from far way	No interaction	No comment
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

46) What was your overall satisfaction with the wildlife portion of the trip?

Very satisfied	Moderately satisfied	Satisfied	Neutral	unsatisfied	moderately unsatisfied	Extremely unsatisfied	No opinion
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*This is the last section! It attempts to get at your overall satisfaction. Please check the appropriate face which corresponds to your feelings on the topic in question.*

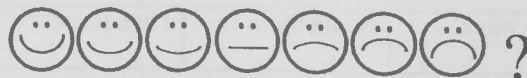
**Overall**

47) Main purpose of visit (please tick most important)

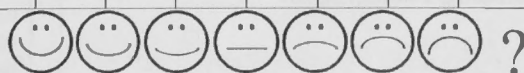
<input type="checkbox"/>	Rest and Relaxation
<input type="checkbox"/>	Wildlife viewing
<input type="checkbox"/>	Cultural experience
<input type="checkbox"/>	No special interest was included in package deal
<input type="checkbox"/>	Business
<input type="checkbox"/>	Other please specify
<input type="checkbox"/>	
<input type="checkbox"/>	

Please place a tick on the smiley face scale to show your approval or emotion in regards to the following statements.

---



48) Over all experience worth the money paid									
49) Number of other boats you saw during cruise									
50) Maintaining status quo in regard to number of passengers in your boat									
51) Paying a conservation fee for entering rivers									
52) Decreasing number of boats permitted per viewing time									
53) Following regulations in regard to permitted viewing distances									
54) Increasing number of boats per visiting time with less passengers per boat									
55) Decreasing number of boats per visit but increasing number of passengers per boat									
56) Following regulations in regards to number of boats permitted per visiting time									
57) Following regulations in regard to number of passengers per boat									
58) Following regulations in regard to boat safety									
59) Over all experience									



*Other Comments:*

## Part 7 Local Survey Results

<p>I Demographics</p>	<p>Pertama sekali bahagian di demographics. Ini soalan asas tentang Keluarga.</p>																																												
<p>livesuka</p> <table border="1"> <caption>Data for livesuka chart</caption> <thead> <tr> <th>Duration</th> <th>Percent</th> </tr> </thead> <tbody> <tr> <td>0-5 year</td> <td>12</td> </tr> <tr> <td>6-10 years</td> <td>8</td> </tr> <tr> <td>11-15 years</td> <td>8</td> </tr> <tr> <td>16-20 year</td> <td>2</td> </tr> <tr> <td>21-25 year</td> <td>5</td> </tr> <tr> <td>28-30 year</td> <td>1</td> </tr> <tr> <td>31+ year</td> <td>65</td> </tr> </tbody> </table> <p>livesuka</p>	Duration	Percent	0-5 year	12	6-10 years	8	11-15 years	8	16-20 year	2	21-25 year	5	28-30 year	1	31+ year	65	<p>Figure 1 Sudah berapa lama tinggal di Sukau?</p>																												
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<p>II Kehidupan Sebelum Pelancong/Pelancongan</p>	<p>Bahagian ini soalan tentang kehidupan sebelum ada pelancong atau pelancongan. Anda tahu mengenai kehidupan sebelum ada pelancong atau pelancongan? Ya / Tidak (tidak kenal pergi bahagian III). Boleh anda ingat apakah kehidupan sebelum ada banyak pelancong atau pelancongan di Kampung Sukau....ingat 10 tahun atau lebih, sebelum ini. Apakah pendapat anda mengenai soalan di bawah ini sebelum adanya pelancongan.</p>																																												

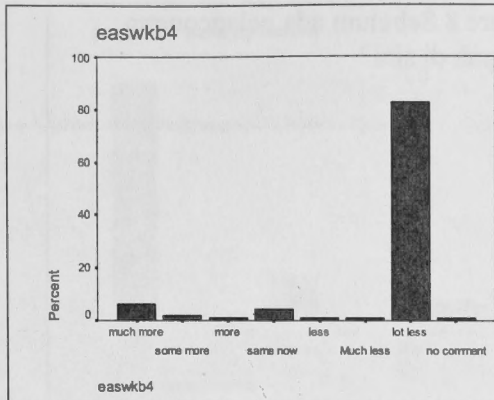


Figure 4 Apakah peluang pekerjaan sebelum ada pelancongan?

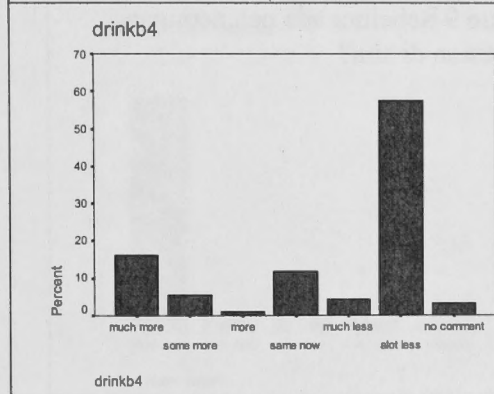


Figure 5 Pada pendapat kamu berapa ramaikah orang ketagih arak sebelum ada pelancongan?

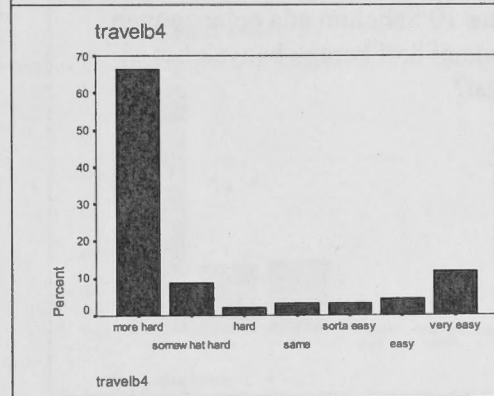


Figure 6 Sebelum adanya pelancongan pengangkutan di sini?

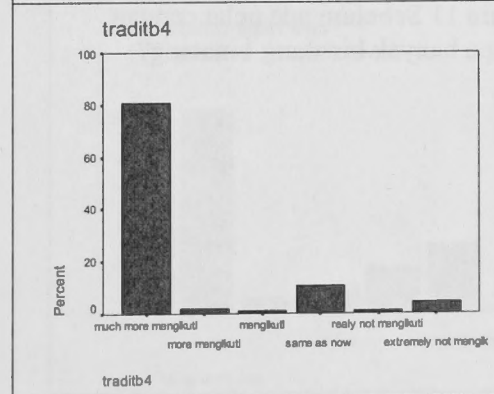


Figure 7 Apakah budaya atau tradisi sebelum ada pelancongan di sini?

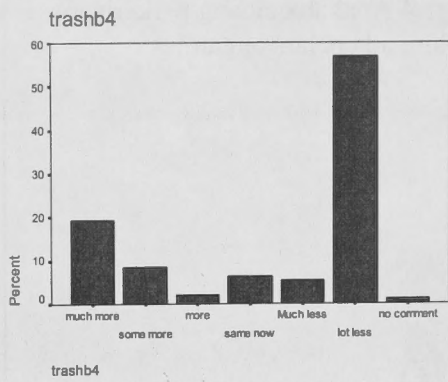


Figure 8 Sebelum ada pelancongan sampah di sini?

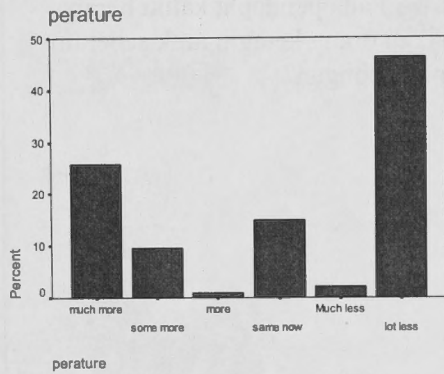


Figure 9 Sebelum ada pelancongan peraturan di sini?

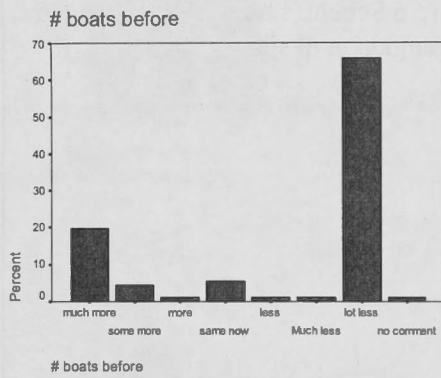


Figure 10 Sebelum ada pelancongan hari demi hari berapa banyak bot di sungai?

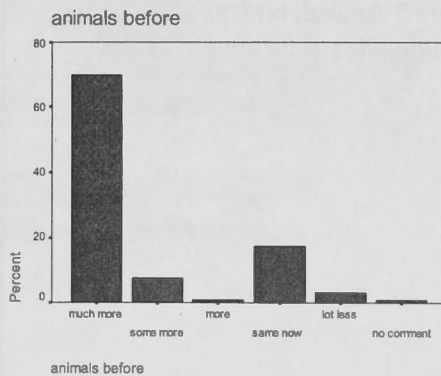


Figure 11 Sebelum ada pelancongan berapa banyak binatang-binatang?

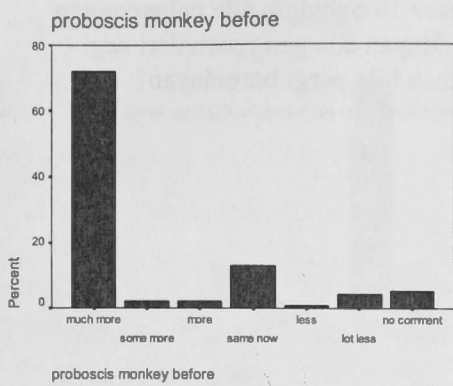


Figure 12 Sebelum ada pelancongan berapa banyak bengkatan?

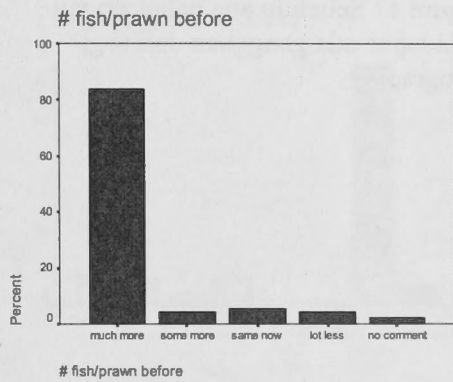


Figure 13 Sebelum ada pelancongan berapa banyak ikan/udang?

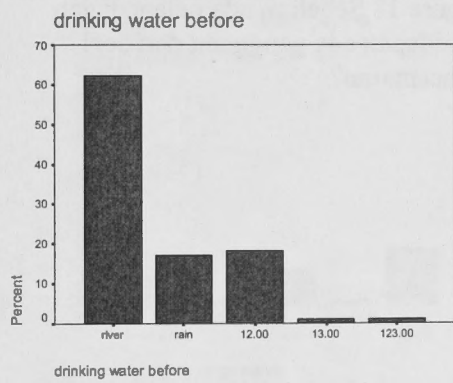


Figure 14 Apakah sumber air sebelum ada pelancongan?

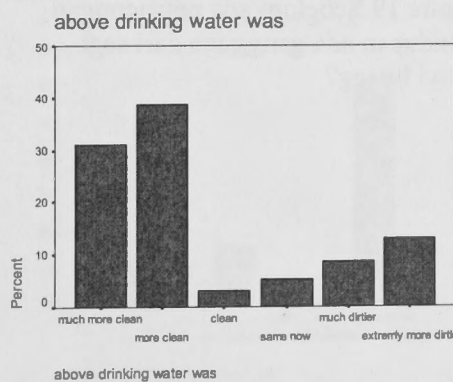


Figure 15 Minum air (di atas)?

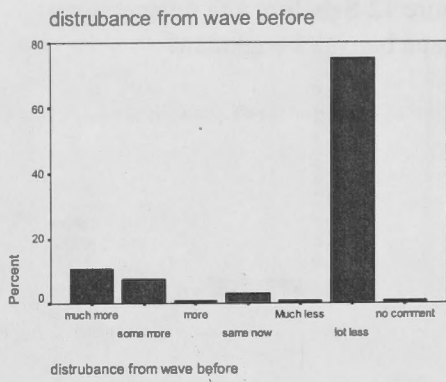


Figure 16 Sebelum ada pelancongan kehidupan ada gangguan dari segi ombak bila pergi bernelayan?

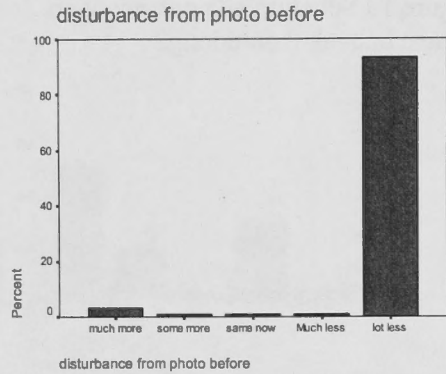


Figure 17 Sebelum ada pelancongan kehidupan ada gangguan dari segi fotografi?

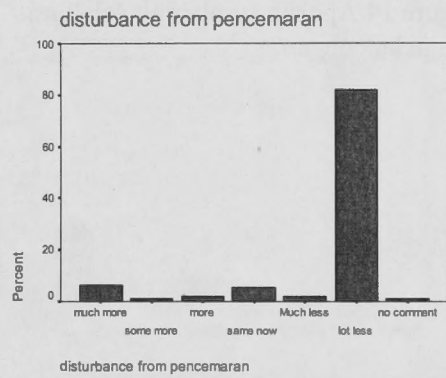


Figure 18 Sebelum ada pelancongan kehidupan ada gangguan dari segi pencemaran?

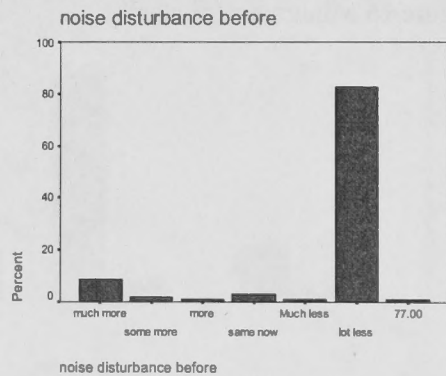


Figure 19 Sebelum ada pelancongan kehidupan ada gangguan dari segi bunyi bising?

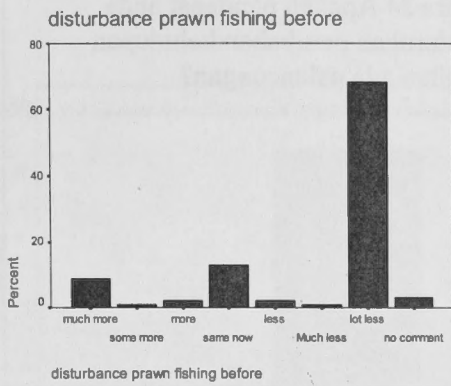


Figure 20 Sebelum ada pelancongan kehidupan ada gangguan dari segi undang-undang bernelayan?

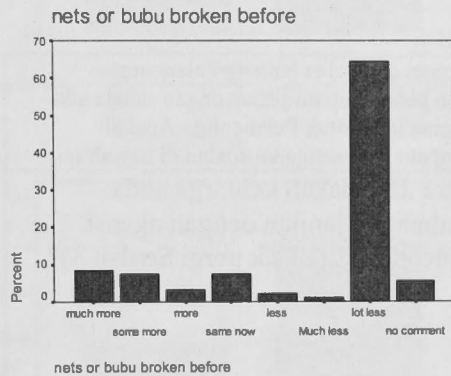


Figure 21 Sebelum ada pelancongan kehidupan ada gangguan dari segi bubu atau pukot rosak?



Figure 22 Sebelum ada pelancongan berapa pemuda-pemudi keluar dari kampung mencari perkerjaan.?

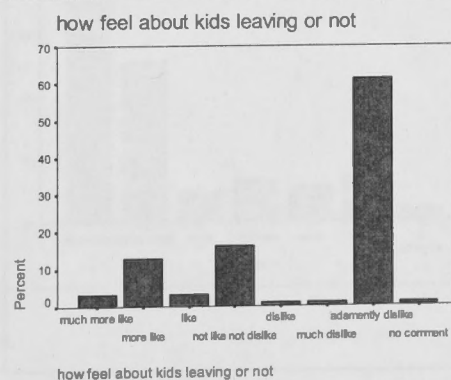


Figure 23 Apa perasaan kamu apabila pemuda-pemudi keluar dari kampung ini?



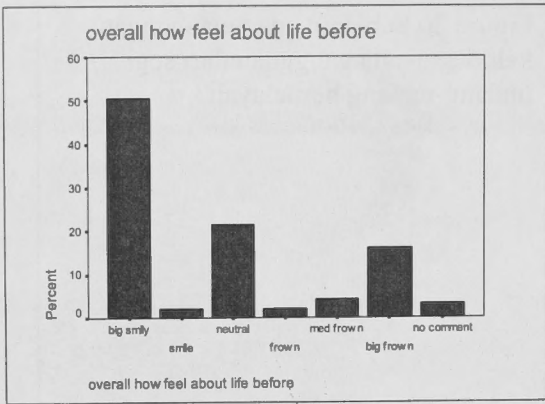


Figure 24 Apakah pendapat anda keseluruhan perubahan kehidupan sebelum ada pelancongan?

III Pelancongan

Bahagian ini soalan tentang Pelancongan. Bukan pelancong ini pelancongan sahaja ada bahagian lain untuk Pelancong. Apakah pendapat anda mengenai soalan di bawah ini.

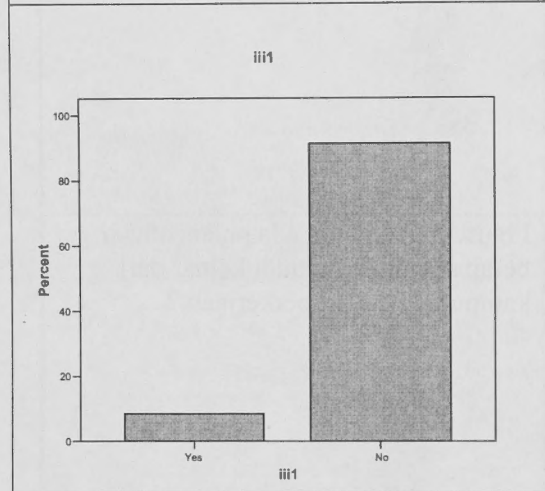


Figure 25 Adakah keluarga anda membuat perjanjian dengan agensi pelancongan? (Tidak pergi Soalan 3)?

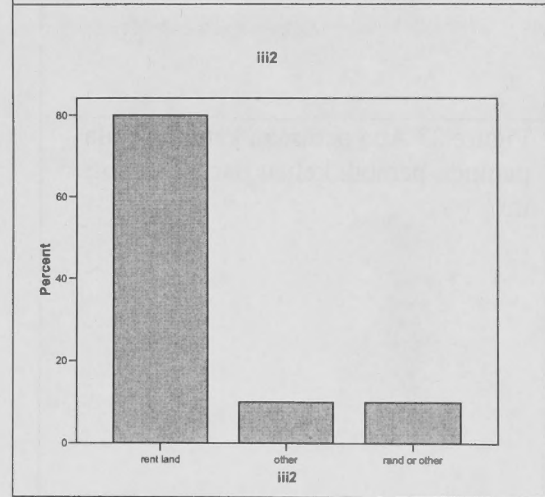


Figure 26 Setuju Keluarga anda?

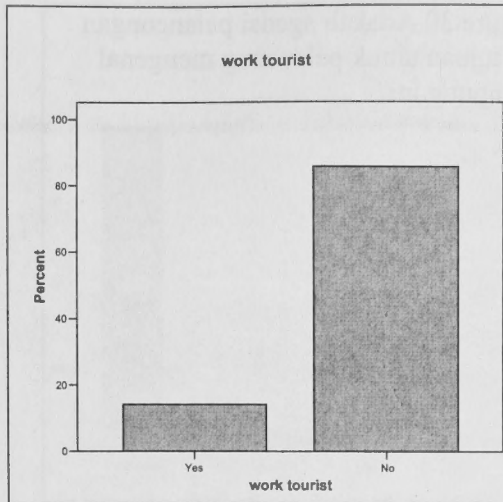


Figure 27 Dahulu adakah ahli keluarga ini bekerja dengan agensi pelancongan (Tidak pergi Soalan 5)?

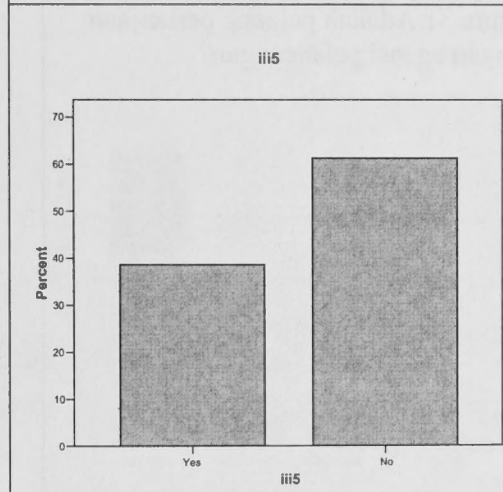


Figure 28 Sekarang adakah ahli keluarga ini bekerja dengan agensi pelancongan (Tidak pergi Soalan 7)?

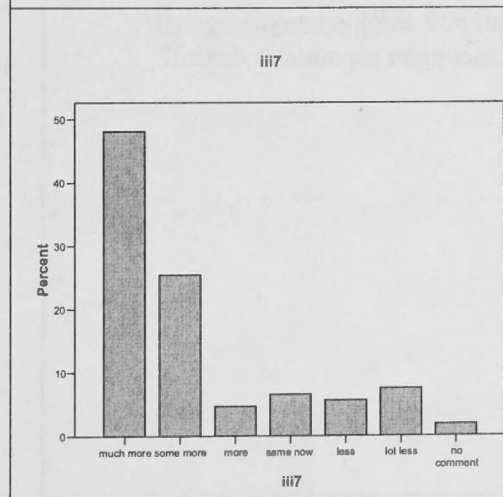


Figure 29 Adakah agensi pelancongan salah satu sumber pendapatan penduduk kampong?

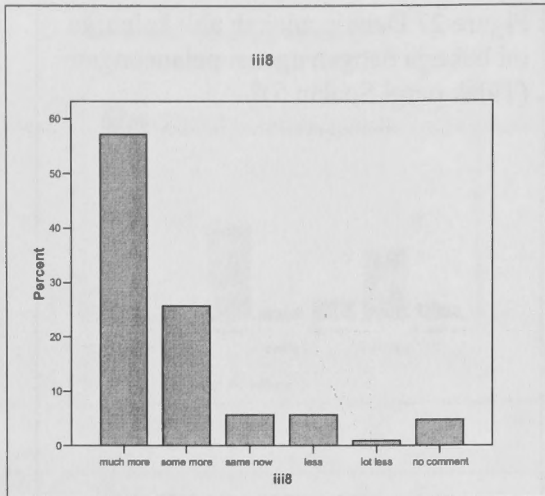


Figure 30 Adakah agensi pelancongan bertujuan untuk pelancong mengenal kampung ini?

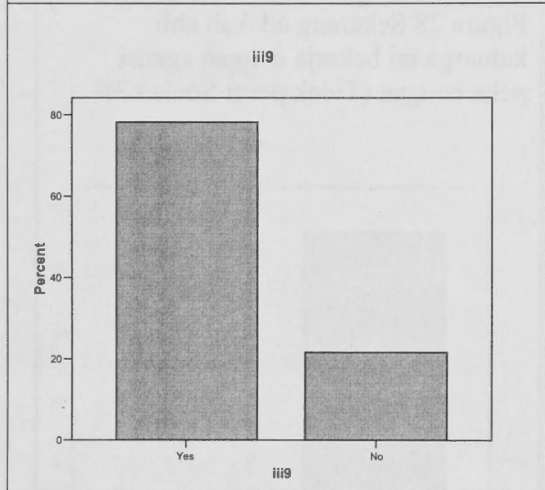


Figure 31 Adakah peluang pekerjaan dengan agensi pelancongan?

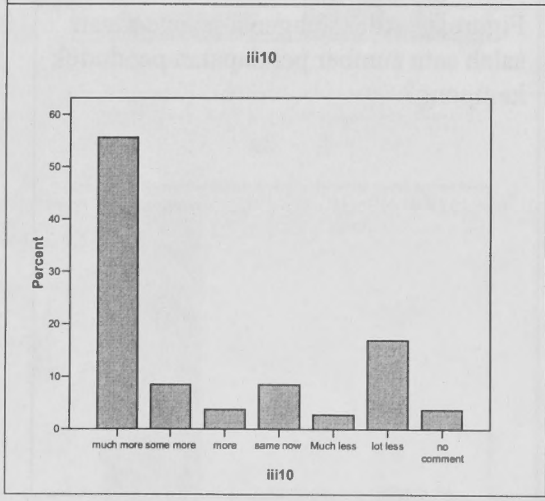


Figure 32 Berapa banyak agensi pelancongan sepatutnya di sini?

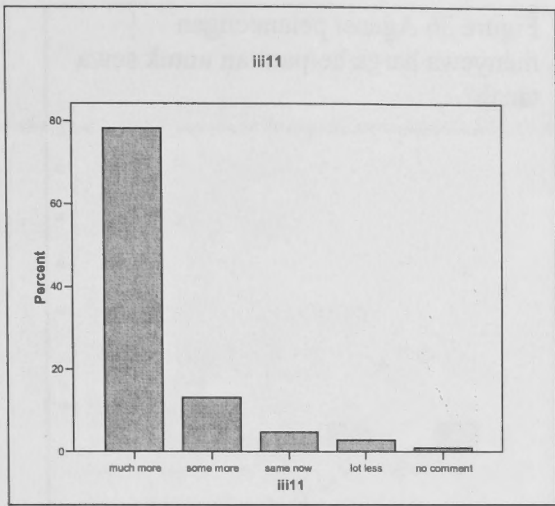


Figure 33 Apakah agensi pelancongan perlu menunjuk ajar kepada pelancong, mengenai budaya dan adat resam orang sukai di Sukau?

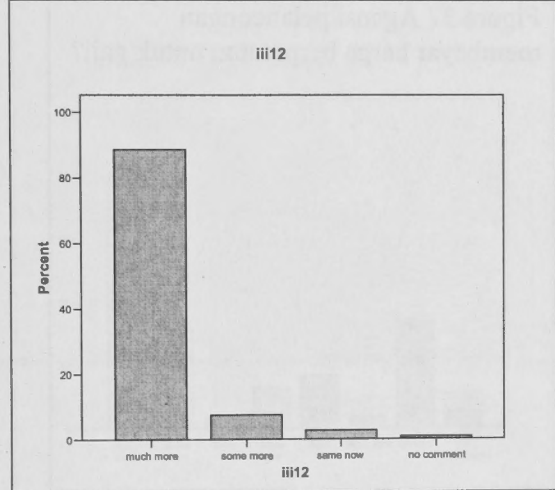


Figure 34 Perlukah agensi pelancongan memberi sumbangan kepada penduduk kampung Sukau?

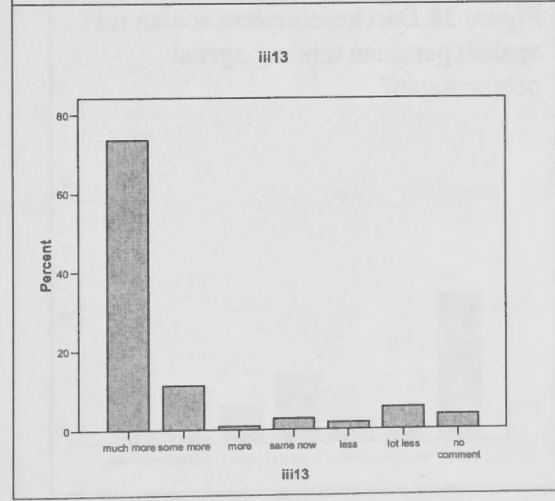


Figure 35 Agensi pelancongan membeli dengan harga berpatutan untuk ikan/udang?

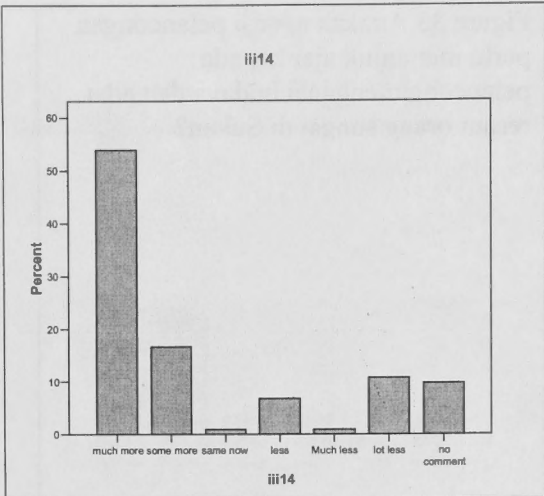


Figure 36 Agensi pelancongan menyewa harga berpatutan untuk sewa tanah?

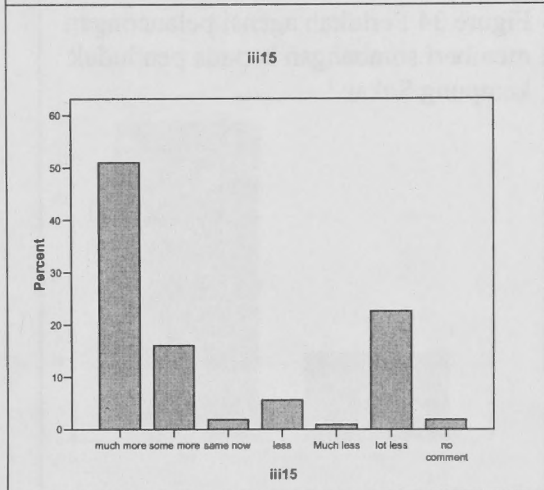


Figure 37 Agensi pelancongan membayar harga berpatutan untuk gaji?

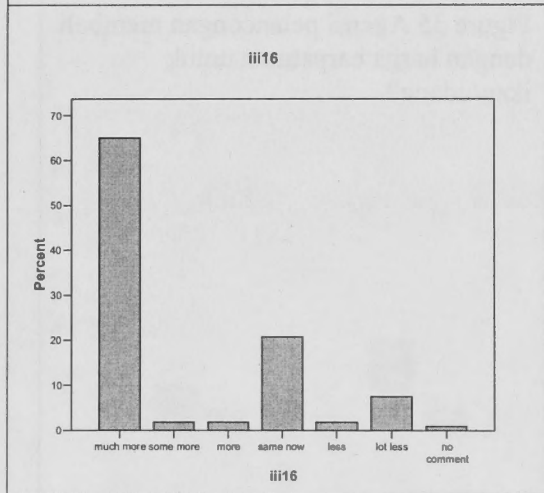


Figure 38 Dari keseluruhan soalan ini apakah perasaan tentang agensi pelancongan?

<p>IV Pelancong</p>	<p>Ada soalan tentang Pelancong. Bukan pelancongan ini pelancong sahaja ada bahagian lain untuk Pelancongan. Apakah pendapat anda mengenai soalan di bawah ini.</p>
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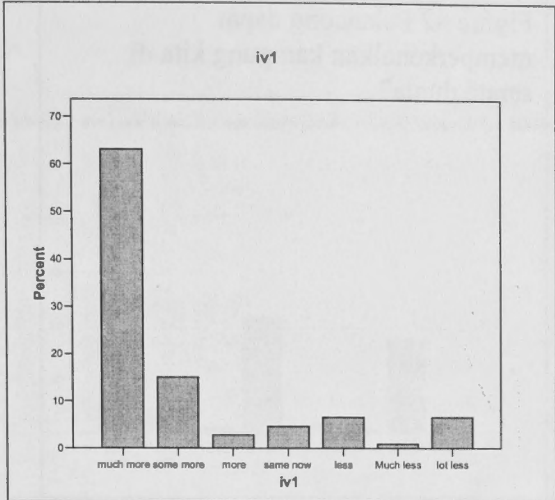


Figure 39 Pelancong adalah salah satu sumber pendapatan di kampung Sukau?

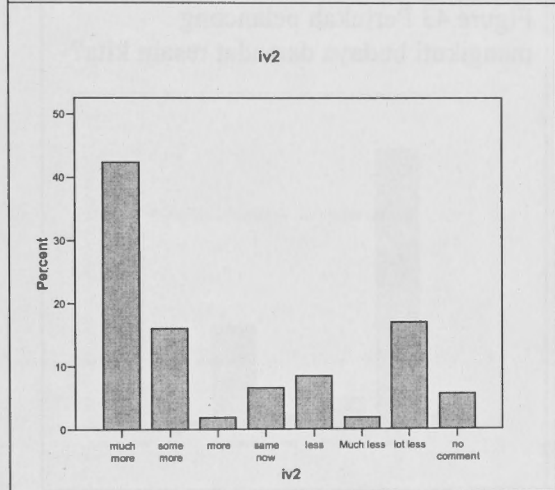


Figure 40 Kita dapat mengenal sesuatu budaya dengan adanya pelancong?

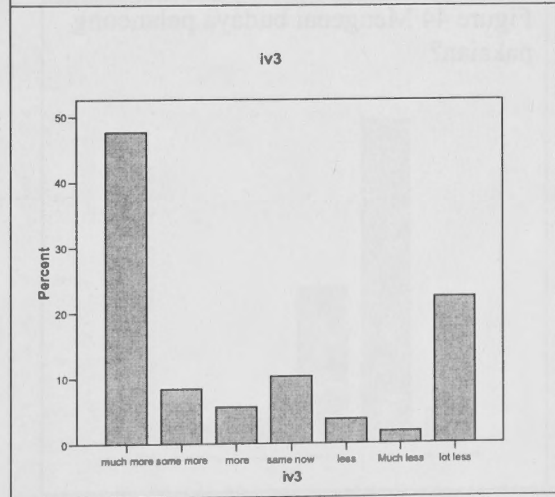


Figure 41 Adakah anda berpeluang berinteraksi dengan pelancong?

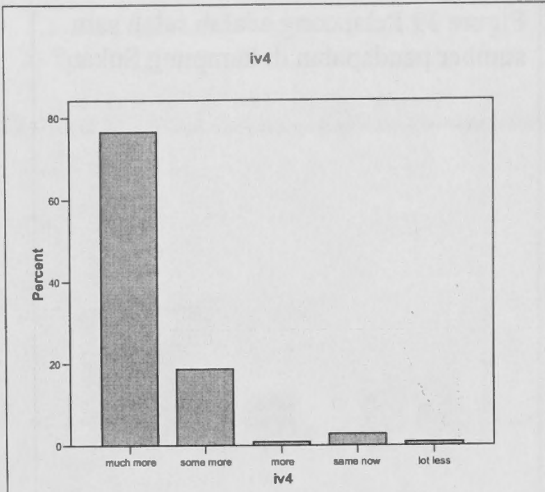


Figure 42 Pelancong dapat memperkenalkan kampung kita di serata dunia?

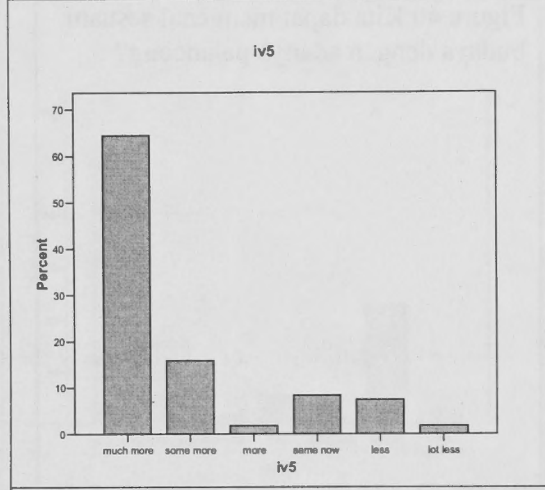


Figure 43 Perlukah pelancong mengikuti budaya dan adat resam kita?

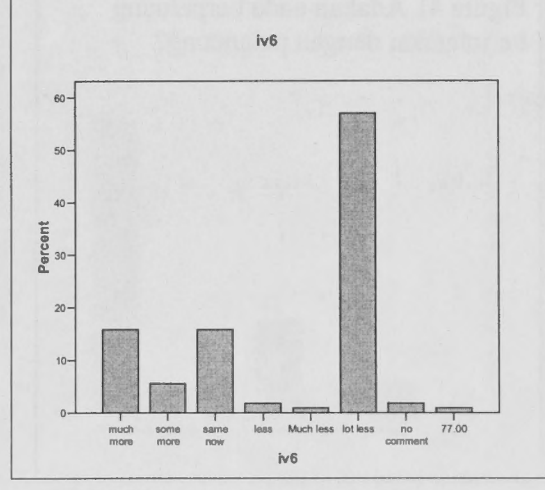


Figure 44 Mengenai budaya pelancong pakaian?

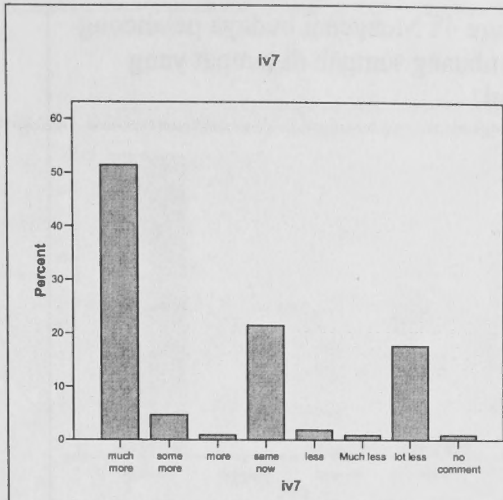


Figure 45 Mengenai budaya pelancong kesopanan?

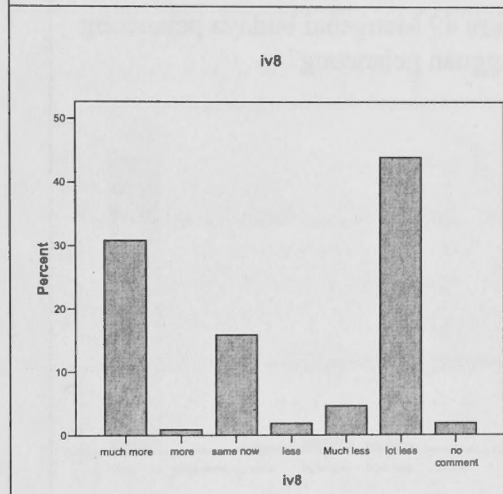


Figure 46 Mengenai budaya pelancong kesopanan fotografi?

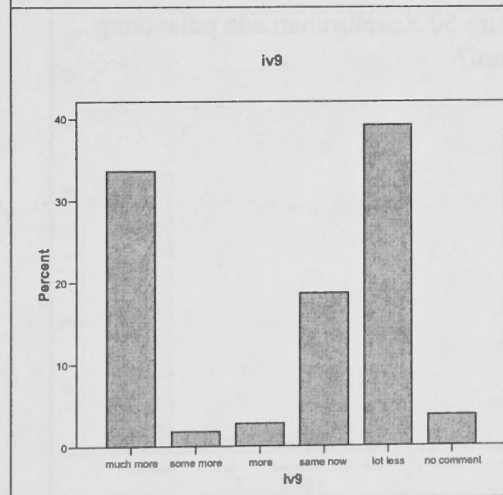


Figure 47 Mengenai budaya pelancong bunyi bising di pelancong?



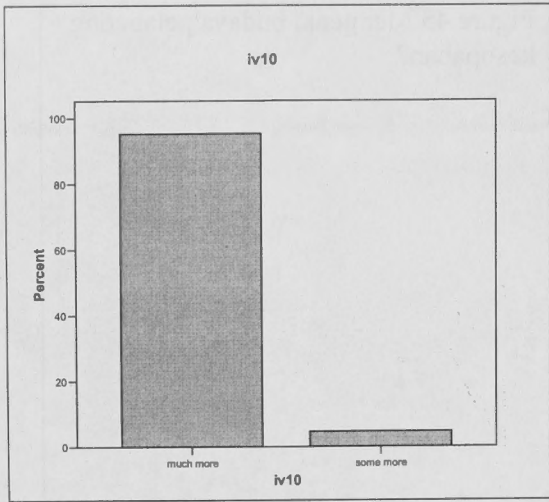


Figure 48 Mengenai budaya pelancong membuang sampah di tempat yang betul?

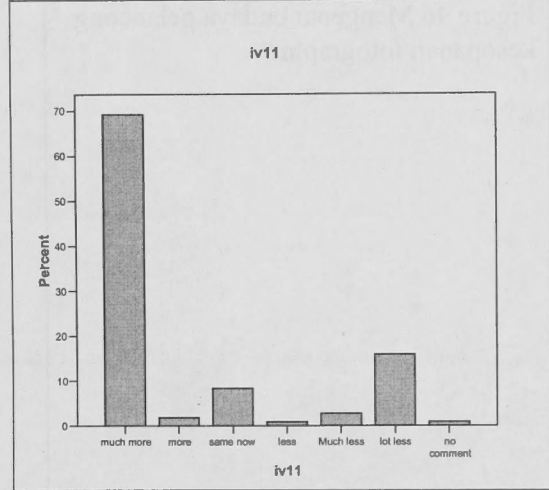


Figure 49 Mengenai budaya pelancong gangguan pelancong?

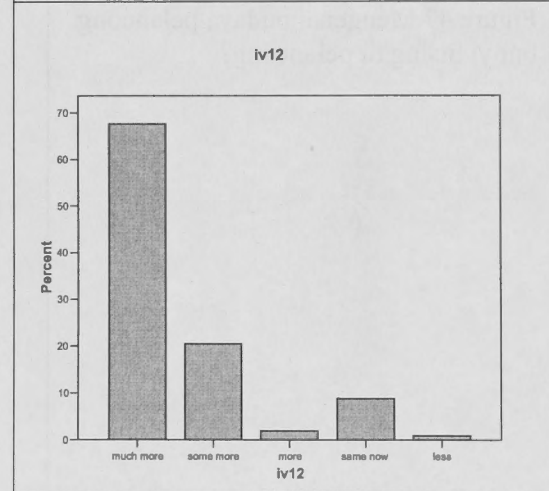


Figure 50 Keseluruhan ada pelancong di sini?

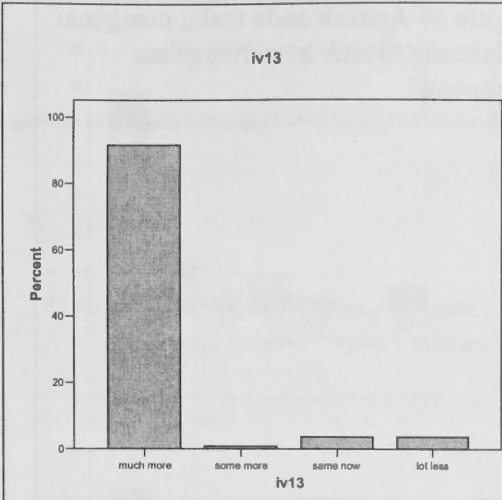


Figure 51 Apakah anda mahu mengenai pelancong Meminta izin sebelum gambar?

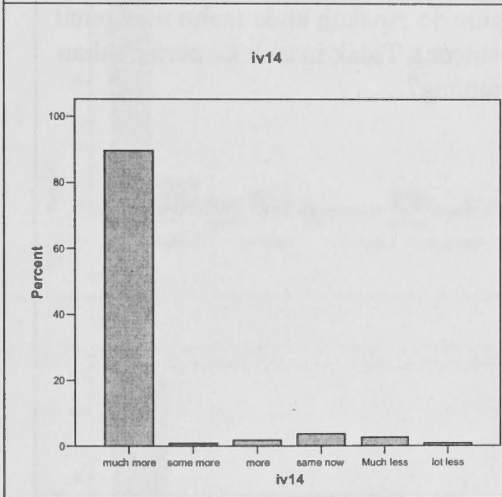


Figure 52 Apakah anda mahu mengenai pelancong Berpakaian kemas?

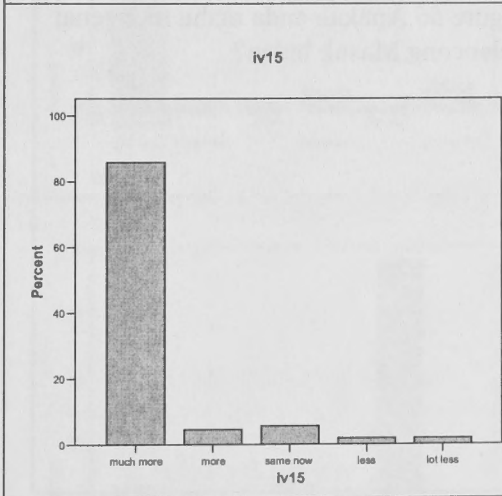


Figure 53 Apakah anda mahu mengenai pelancong Mengikuti budaya dan adat resam di sini?

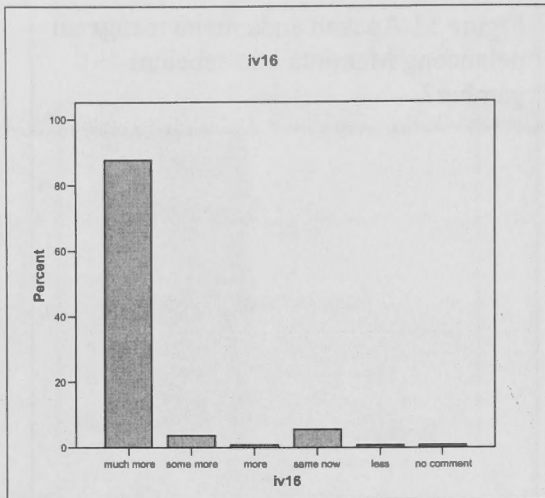


Figure 54 Apakah anda mahu mengenai pelancong Masuk ke pertengahan kampung?

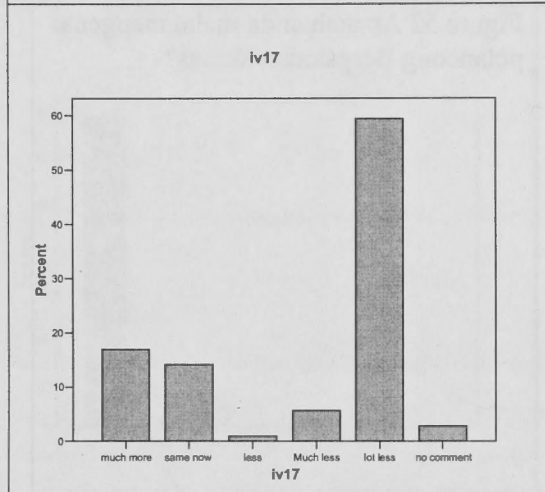


Figure 55 Apakah anda mahu mengenai pelancong Tidak masuk ke pertengahan kampung?

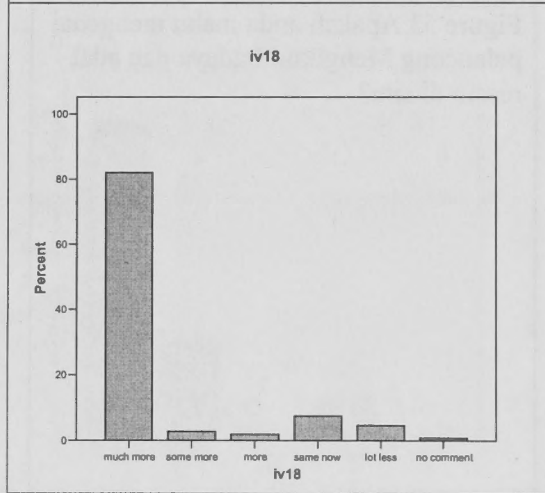


Figure 56 Apakah anda mahu mengenai pelancong Masuk hutan?

V Kehidupan selepas pelancong/pelancongan

Ada soalan tentang kehidupan selepas ada pelancong atau pelancongan. Apakah pendapat anda mengenai soalan di bawah ini selepas adanya pelancongan.

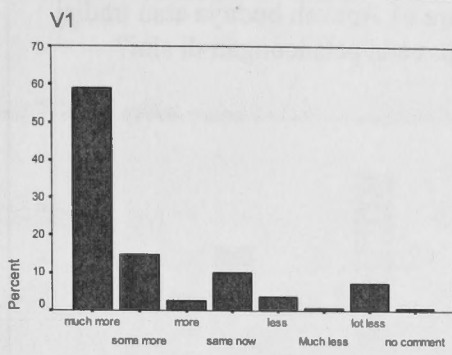


Figure 57 Apakah kehidupan selepas pelancong-pelancongan ada perubahan dari segi pendapatan?

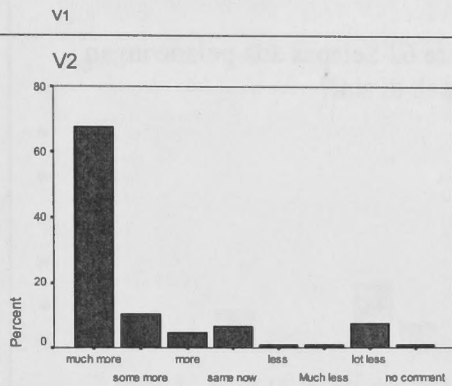


Figure 58 Apakah peluang perkerjaan selepas ada pelancongan?

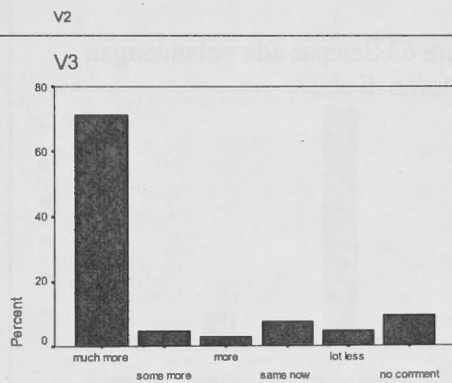


Figure 59 Pada pendapat kamu berapa ramaikah orang ketagih arak selepas ada pelancongan?

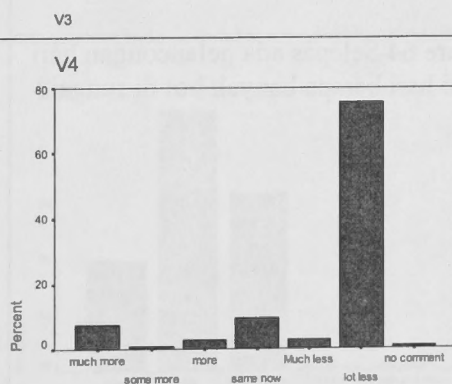


Figure 60 Adakah selepas adanya pelancongan pengangkutan di sini?

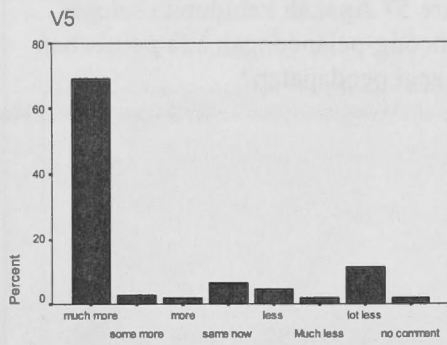


Figure 61 Apakah budaya atau tradisi selepas ada pelancongan di sini?

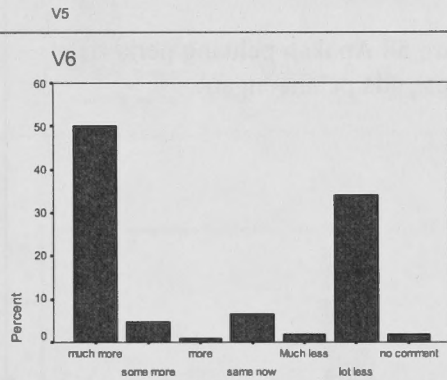


Figure 62 Selepas ada pelancongan sampah di sini?

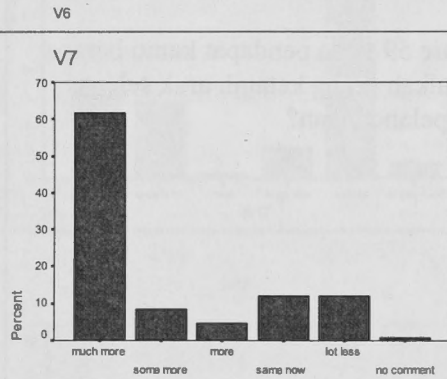


Figure 63 Selepas ada pelancongan peraturan di sini?

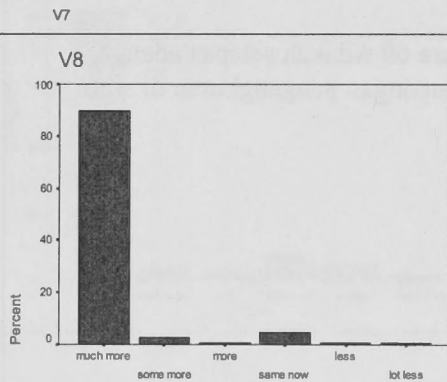


Figure 64 Selepas ada pelancongan hari demi hari berapa banyak bot di sungai?

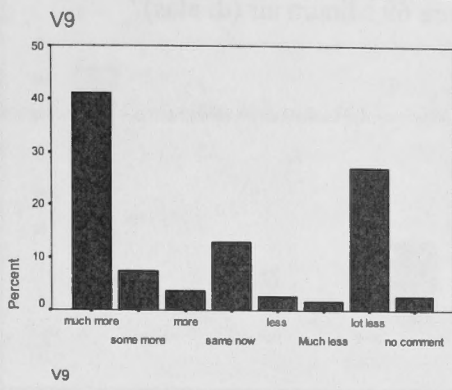


Figure 65 Selepas ada pelancongan berapa banyak binatang-binatang?

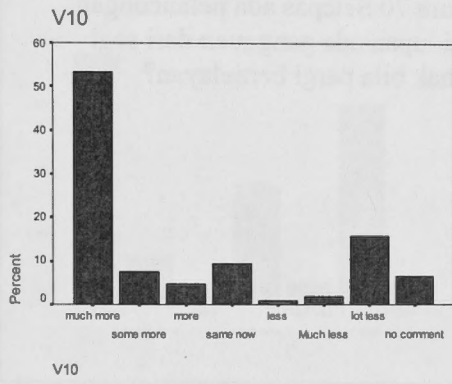


Figure 66 Selepas ada pelancongan berapa banyak bengkatan?

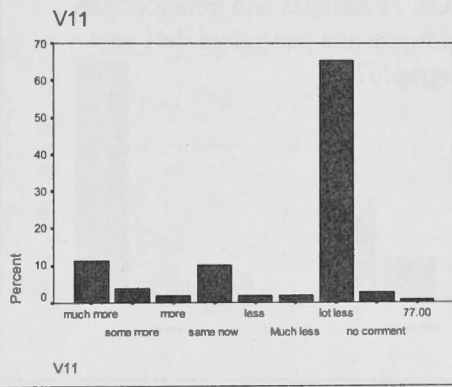


Figure 67 Selepas ada pelancongan berapa banyak ikan/udang?

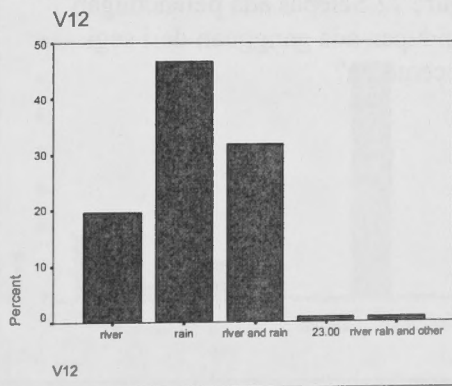
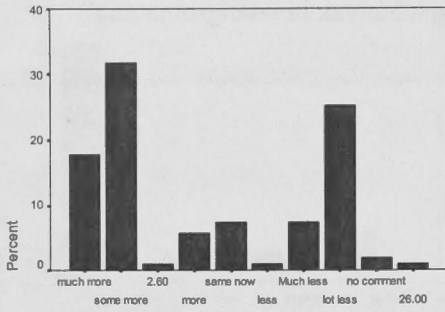


Figure 68 Apakah sumber air selepas ada pelancongan?

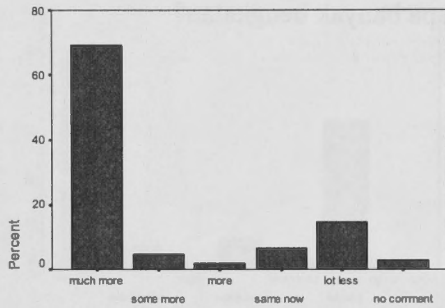
V13



V13

Figure 69 Minum air (di atas)?

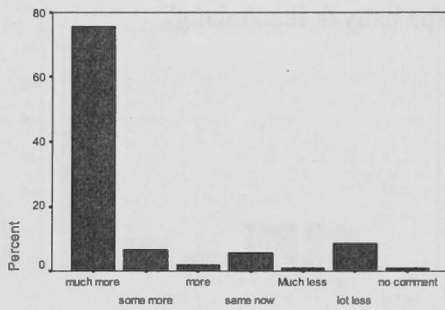
V14



V14

Figure 70 Selepas ada pelancongan kehidupan ada gangguan dari segi ombak bila pergi bernelayan?

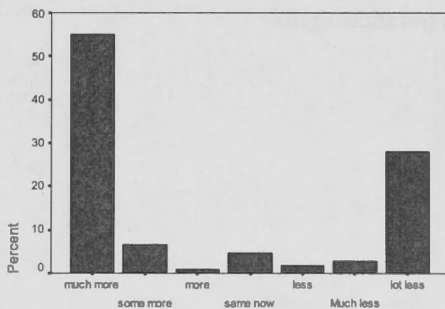
V15



V15

Figure 71 Selepas ada pelancongan kehidupan ada gangguan dari segi fotografi?

V16



V16

Figure 72 Selepas ada pelancongan kehidupan ada gangguan dari segi pencemaran?

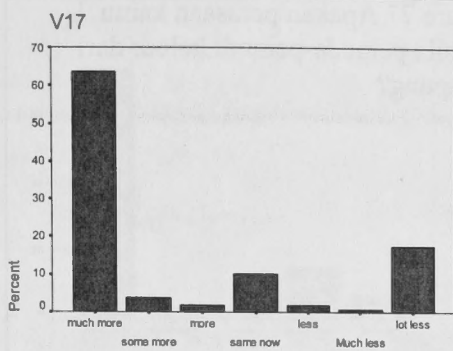


Figure 73 Selepas ada pelancongan kehidupan ada gangguan dari segi bunyi bising?

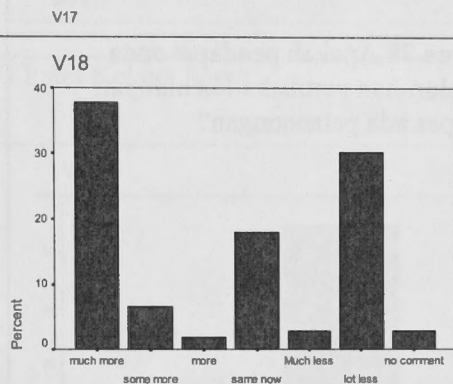


Figure 74 Selepas ada pelancongan kehidupan ada gangguan dari segi undang-undang bernelayan?

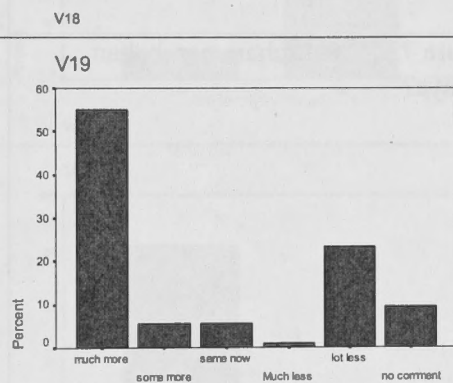


Figure 75 Selepas ada pelancongan kehidupan ada gangguan dari segi buku atau pukal rosak?

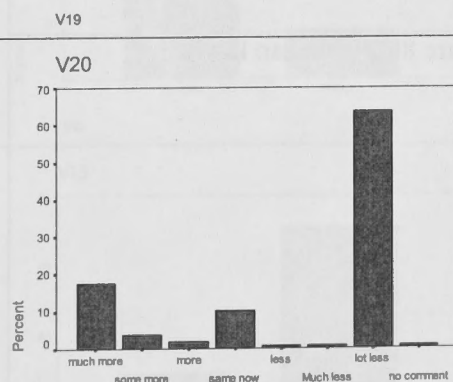


Figure 76 Selepas ada pelancong berapa pemuda-pemudi keluar dari kampung mencari perkerjaan.?

V20



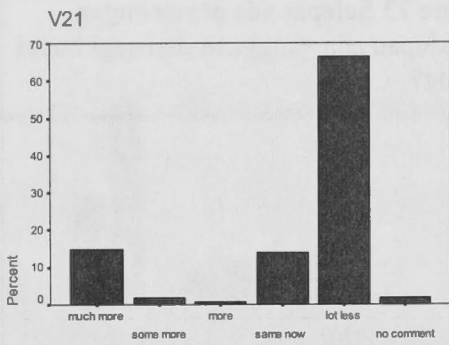


Figure 77 Apakah perasaan kamu apabila pemuda-pemudi keluar dari kampung?

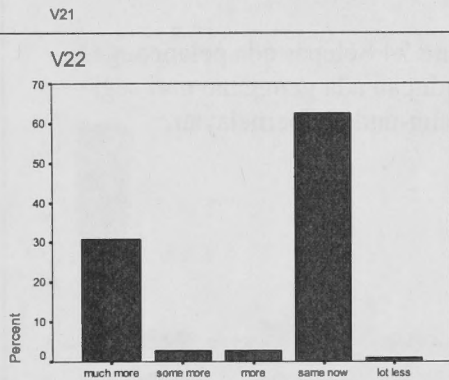


Figure 78 Apakah pendapat anda keseluruhan perubahan kehidupan selepas ada pelancongan?

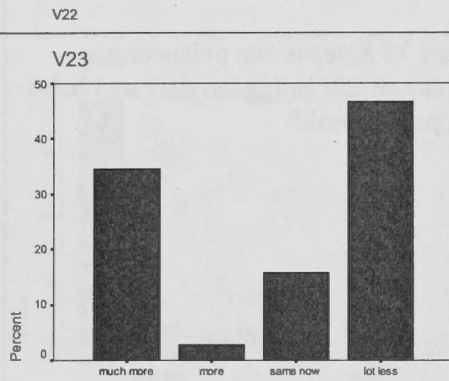


Figure 79 Keseluruhan perubahan budaya?

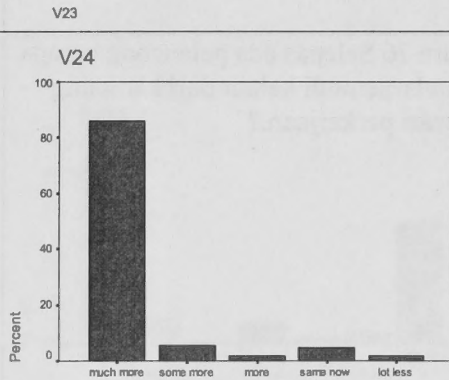


Figure 80 Perubahan kampung?

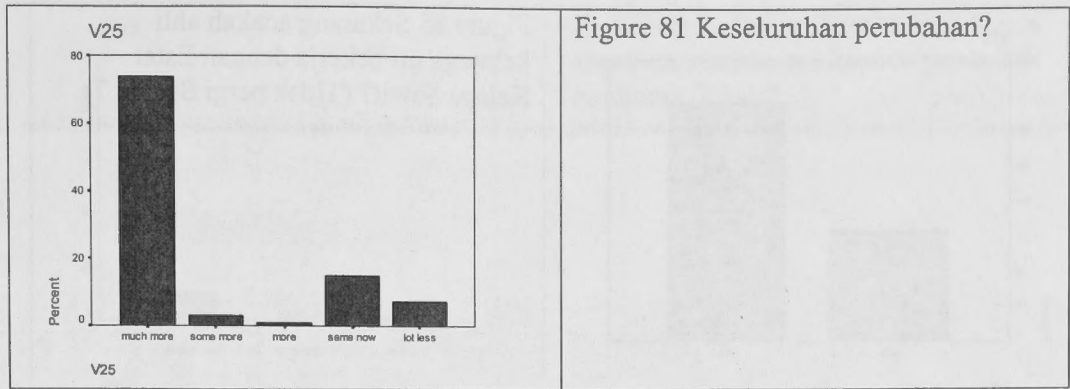
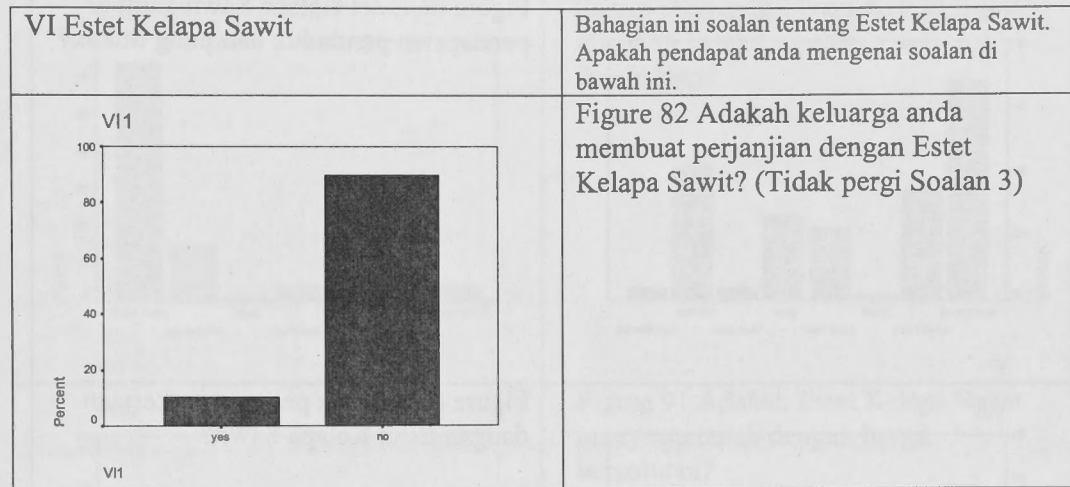


Figure 81 Keseluruhan perubahan?



Bahagian ini soalan tentang Estet Kelapa Sawit. Apakah pendapat anda mengenai soalan di bawah ini.

Figure 82 Adakah keluarga anda membuat perjanjian dengan Estet Kelapa Sawit? (Tidak pergi Soalan 3)

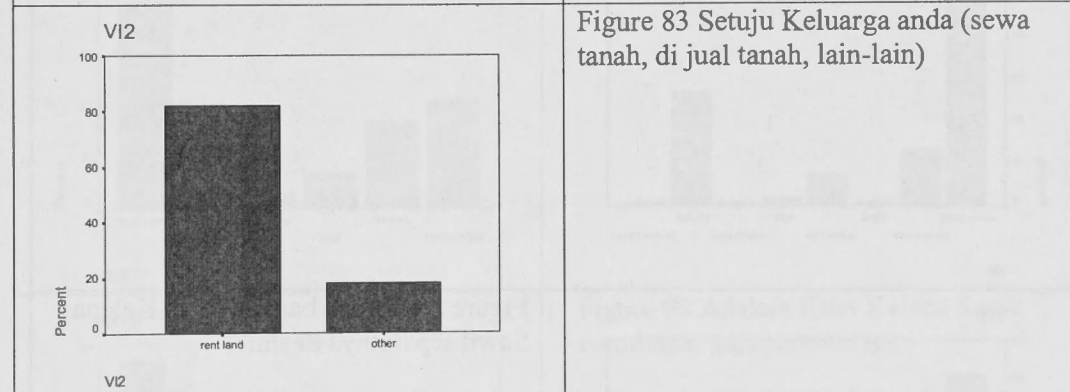


Figure 83 Setuju Keluarga anda (sewa tanah, di jual tanah, lain-lain)

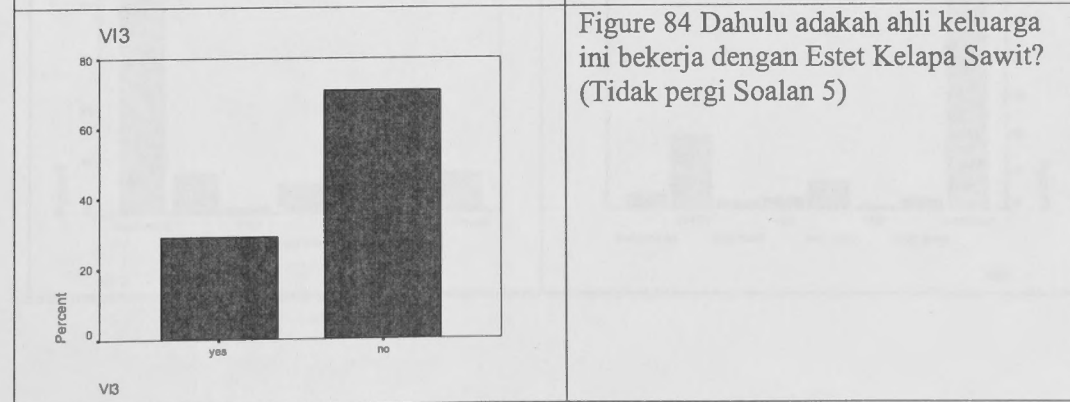


Figure 84 Dahulu adakah ahli keluarga ini bekerja dengan Estet Kelapa Sawit? (Tidak pergi Soalan 5)

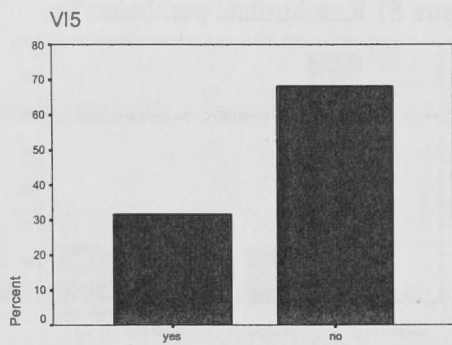


Figure 85 Sekarang adakah ahli keluarga ini bekerja dengan Estet Kelapa Sawit? (Tidak pergi Soalan 7)

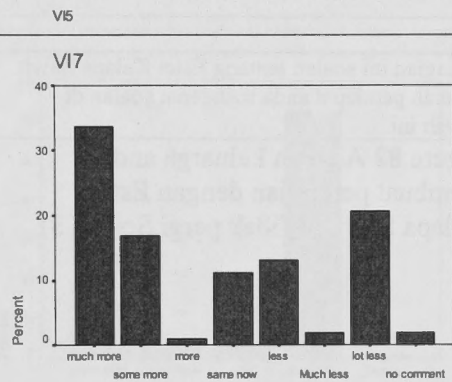


Figure 86 Estet Kelapa Sawit sumber pendapatan penduduk kampung Sukau?

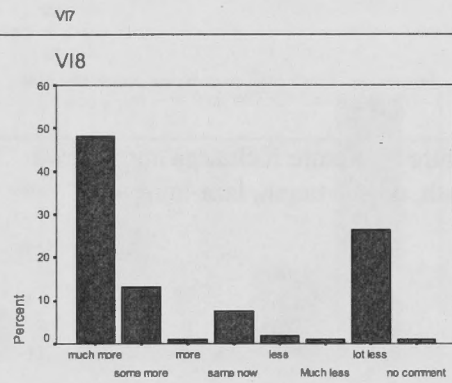


Figure 87 Adakah peluang perkerjaan dengan Estet Kelapa Sawit?

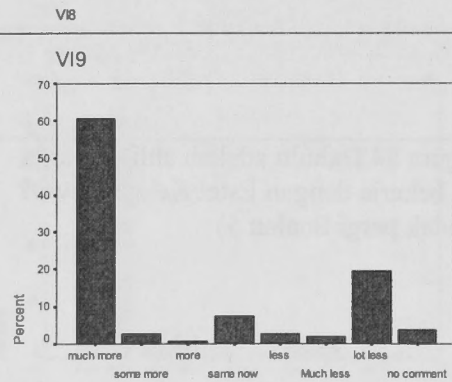


Figure 88 Berapa banyak Estet Kelapa Sawit sepatutnya di sini?

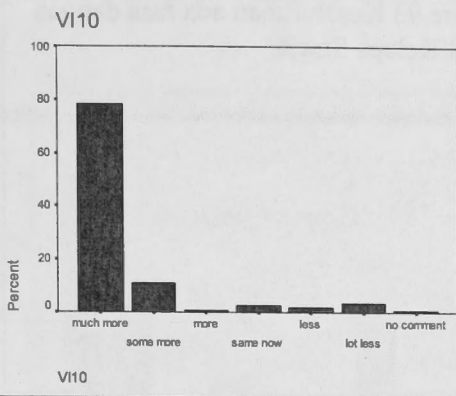


Figure 89 Perlukah Estet Kelapa Sawit memberi sumbangan kepada penduduk kampung Sukau?

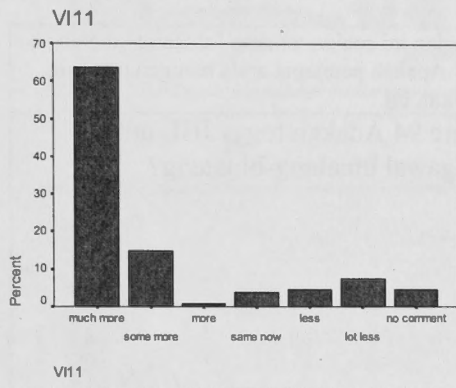


Figure 90 Adakah Estet Kelapa Sawit membeli harga berpatutan untuk ikan/udang?

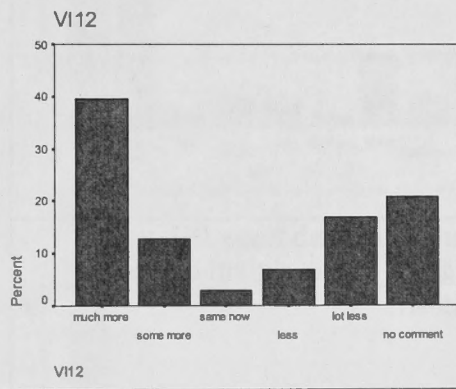


Figure 91 Adakah Estet Kelapa Sawit menyewa tanah dengan harga berpatutan?

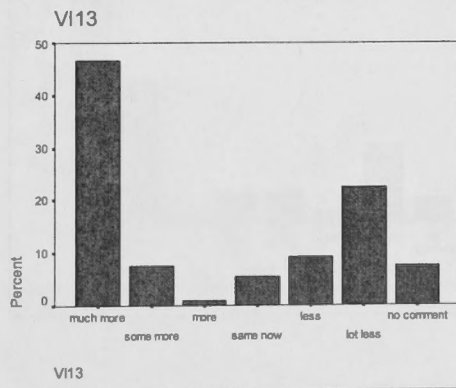


Figure 92 Adakah Estet Kelapa Sawit membayar gaji berpatutan?

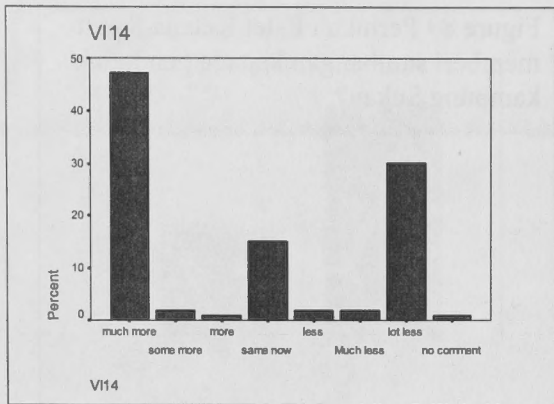


Figure 93 Keseluruhan ada rasa dangan Estet Kelapa Sawit?

VII Jabatan Hidupan Liar

Bahagian ini soalan tentang Jabatan Hidupan Liar. Apakah pendapat anda mengenai soalan di bawah ini.

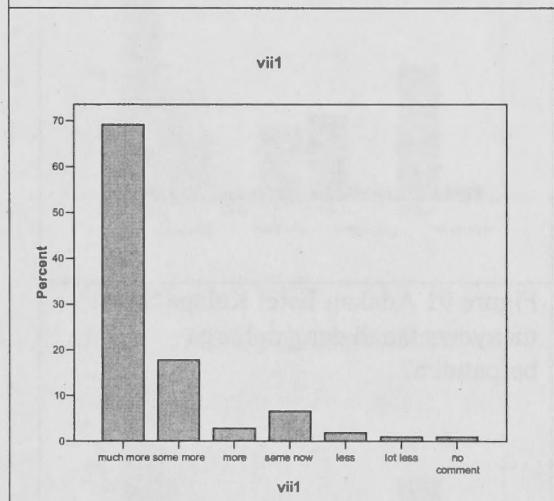


Figure 94 Adakah tugas JHL untuk mengawal binatang-binatang?

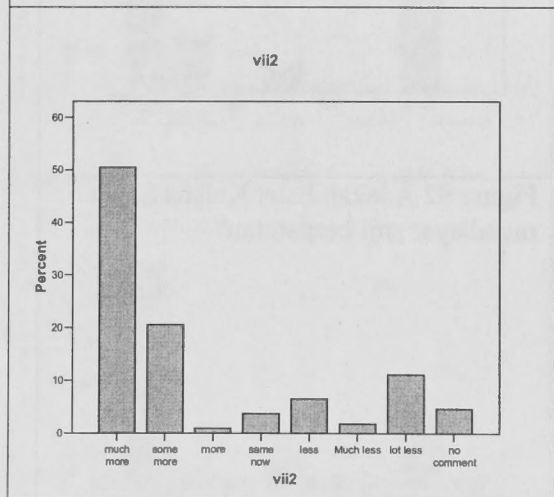


Figure 95 Adakah tugas JHL untuk mengawal semua aktiviti dalam sanktuari?

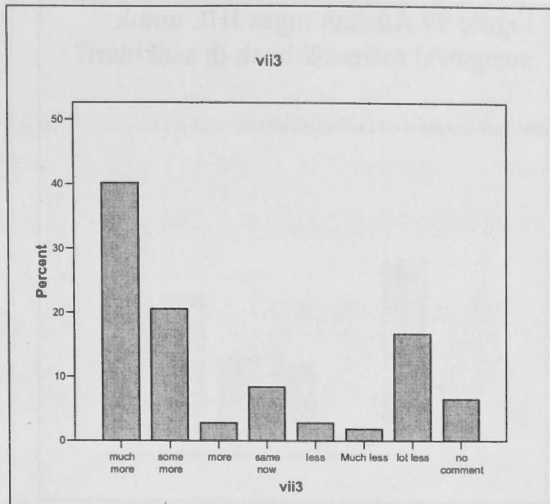


Figure 96 Adakah tugas JHL untuk mengawal aktiviti Pelancong dalam hutan?

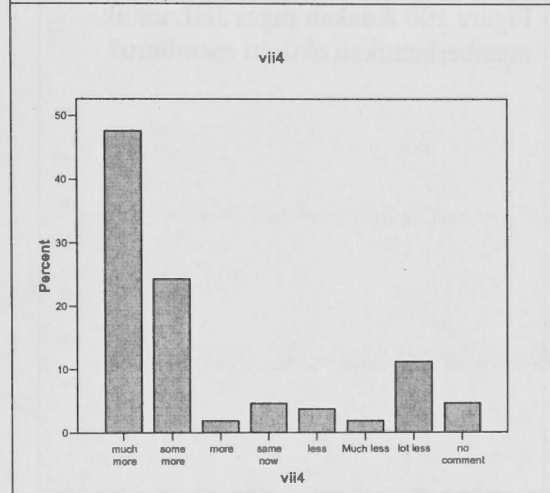


Figure 97 Adakah tugas JHL untuk mengawal aktiviti memburu?

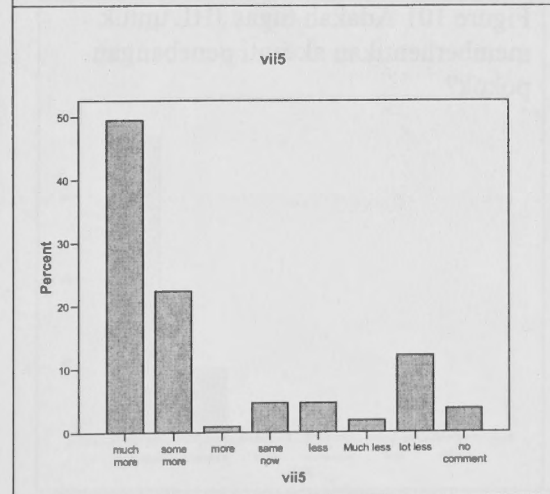


Figure 98 Adakah tugas JHL untuk mengawal penebangan pokok?

vii6

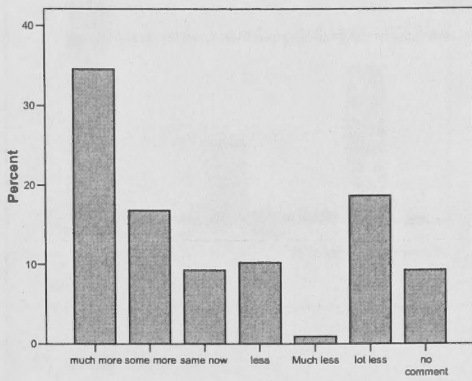


Figure 99 Adakah tugas JHL untuk mengawal memetik buah di sanktuari?

vii7

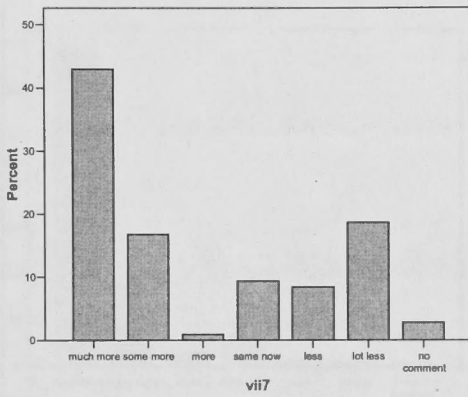


Figure 100 Adakah tugas JHL untuk memberhentikan aktiviti memburu?

vii8

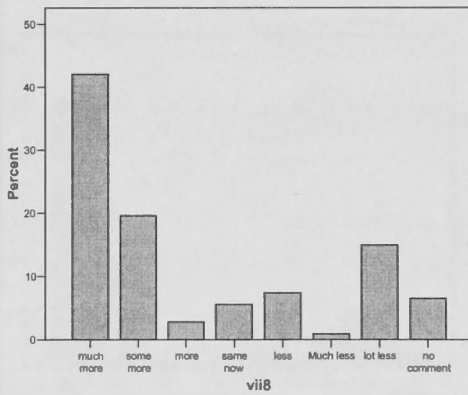


Figure 101 Adakah tugas JHL untuk memberhentikan aktiviti penebangan pokok?

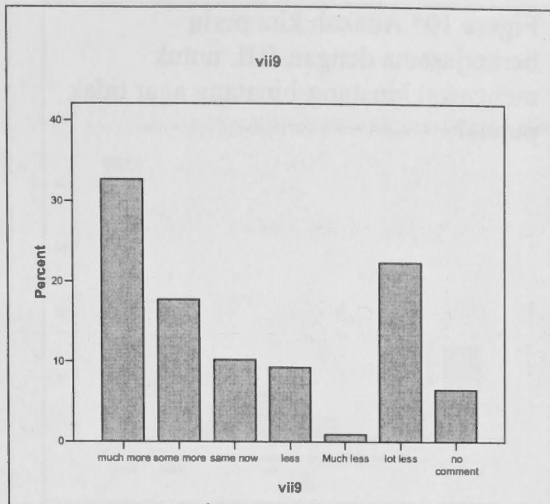


Figure 102 Adakah tugas JHL untuk memberhentikan aktiviti memetik buah di sanktuari?

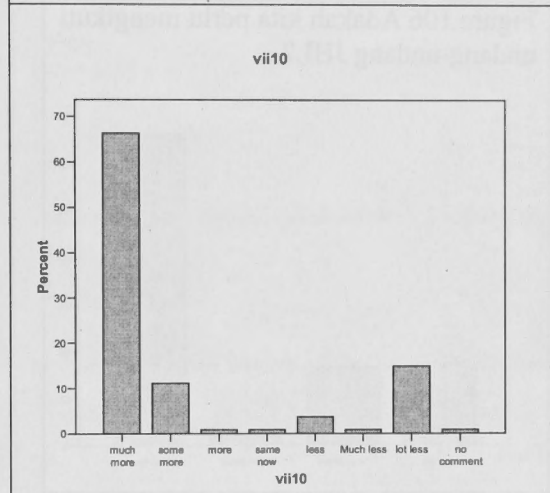


Figure 103 Adakah tugas JHL untuk mengawasi kebun-kebun kita daripada di binasa oleh binatang liar?

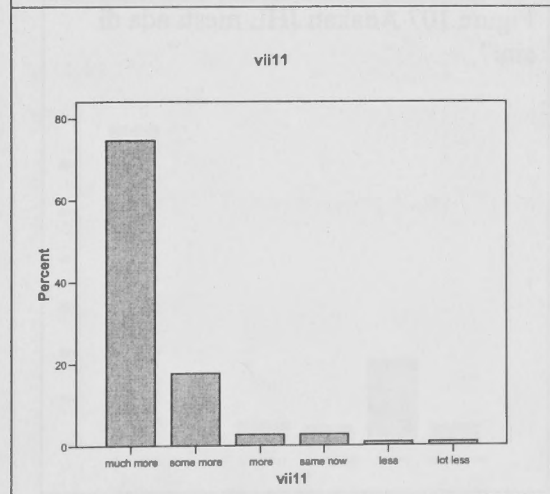


Figure 104 Adakah tugas JHL untuk mengawal binatang-binatang supaya tidak pupus?



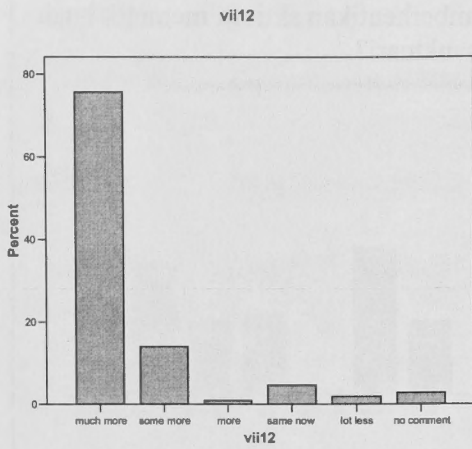


Figure 105 Adakah kita perlu berkerjasama dengan JHL untuk mengawal binatang-binatang agar tidak pupus?

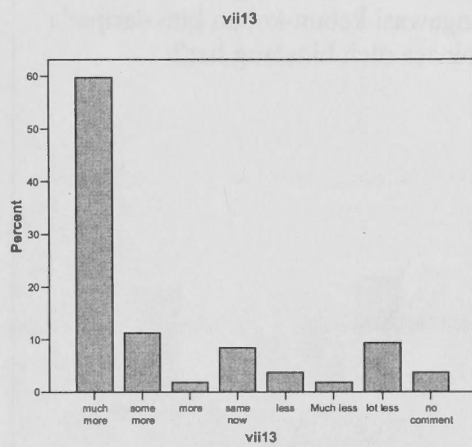


Figure 106 Adakah kita perlu mengikuti undang-undang JHL?

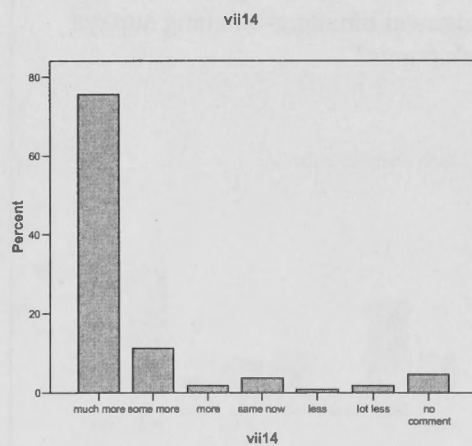


Figure 107 Adakah JHL mesti ada di sini?

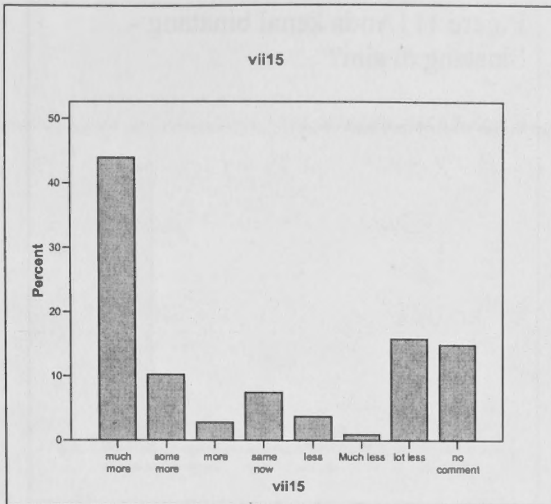


Figure 108 Adakah JHL sekarang membuat kerja yang sepatutnya?

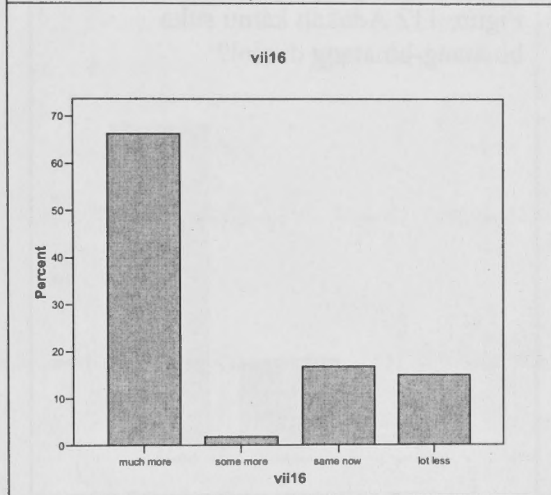


Figure 109 Adakah kamu bermasalah dengan JHL?

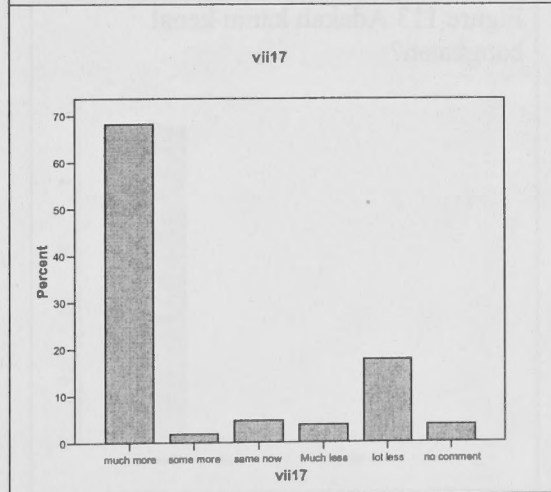


Figure 110 Adakah perlu kebenaran daripada JHL sebelum pergi ke sanktuari?

### VIII Binatang-Binatang

Bahagian ini soalan tentang Binatang-binatang di hutan. Apakah pendapat anda mengenai soalan di bawah ini.

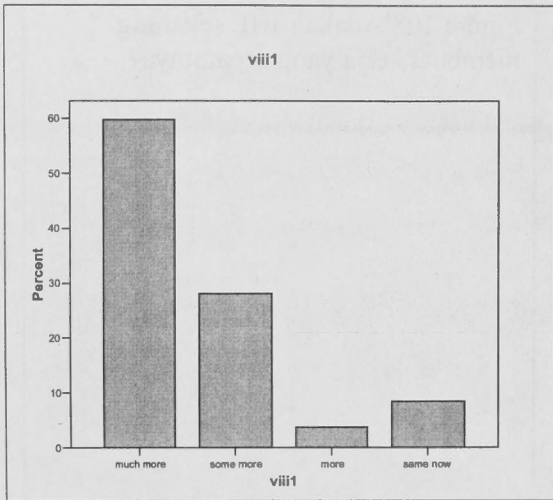


Figure 111 Anda kenal binatang - binatang di sini?

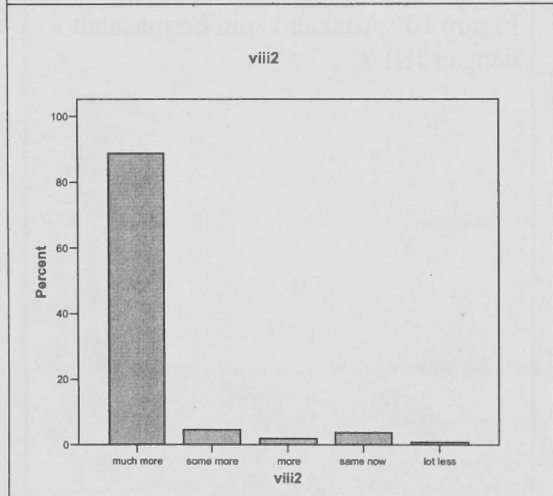


Figure 112 Adakah kamu suka binatang-binatang di sini?

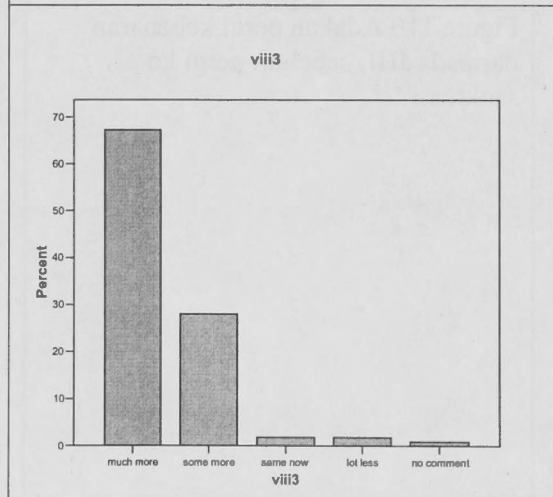


Figure 113 Adakah kamu kenal bangkatan?

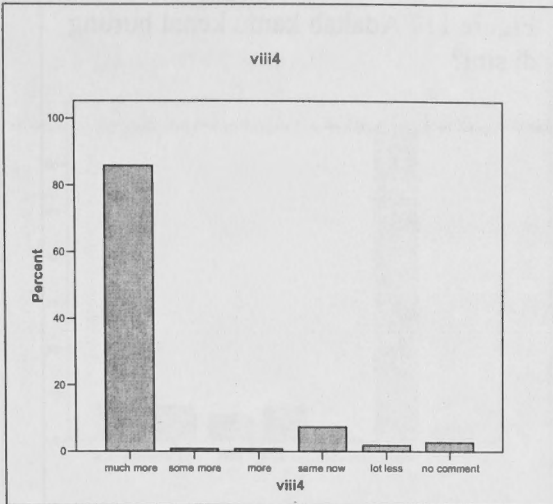


Figure 114 Adakah kamu suka bangkatan?

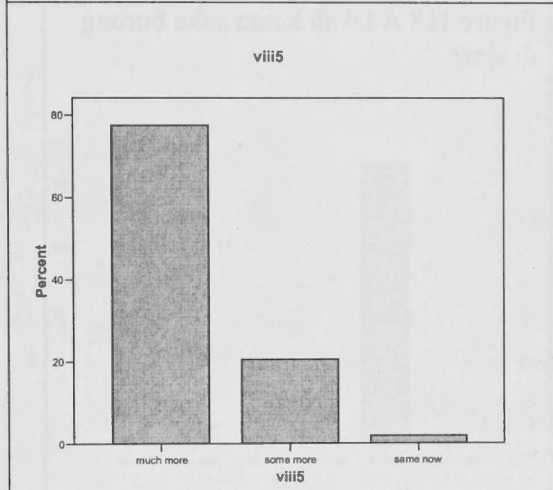


Figure 115 Adakah kamu kenal ikan sungai?

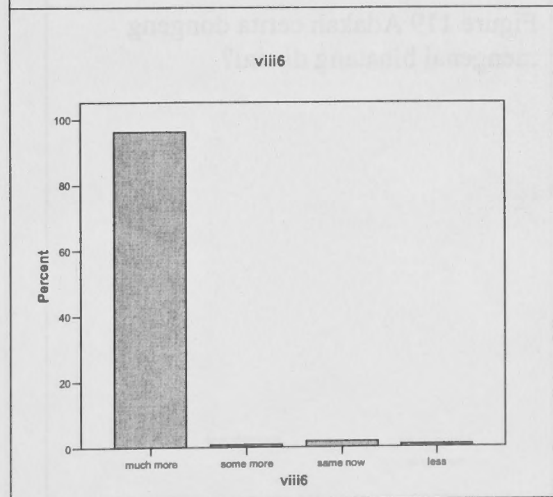


Figure 116 Adakah kamu suka ikan sungai?

Figure 117 Adakah kamu kenal burung di sini?

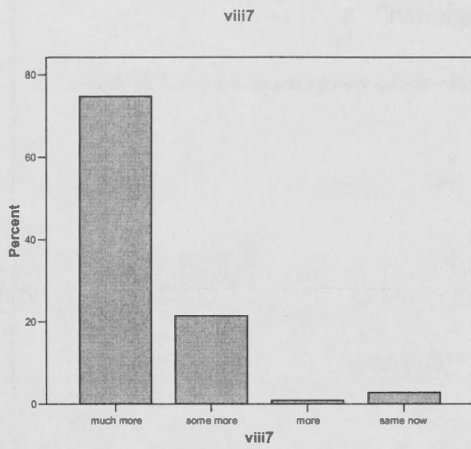


Figure 118 Adakah kamu suka burung di sini?

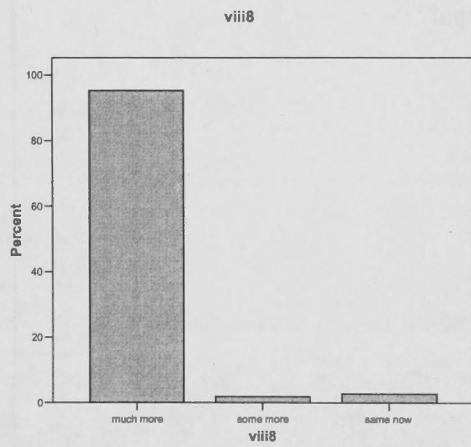
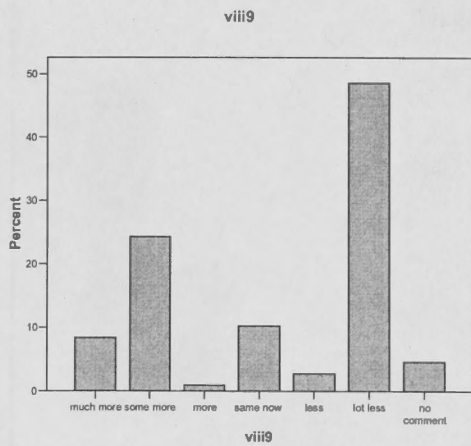


Figure 119 Adakah cerita dongeng mengenai binatang di sini?



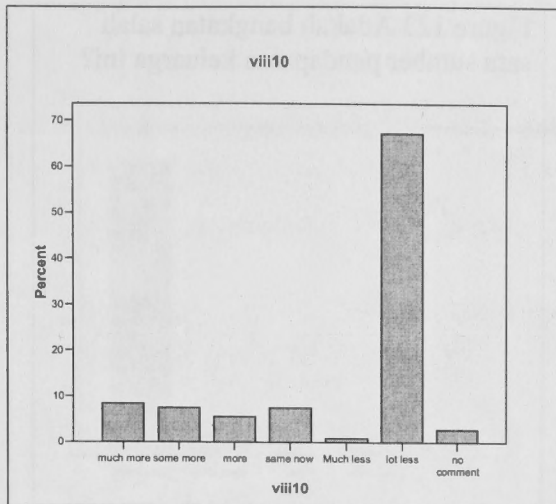


Figure 120 Adakah cerita mengenai bangkatan di sini?

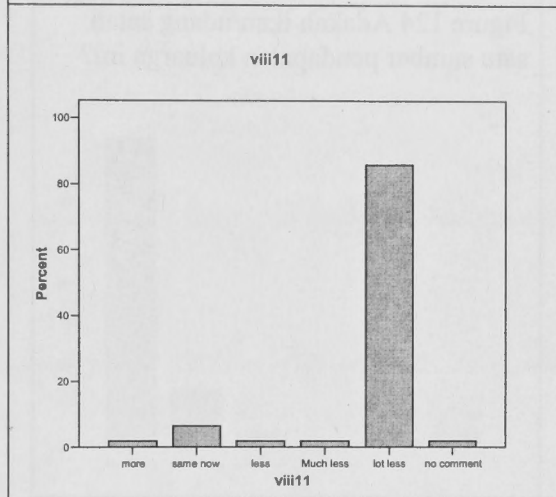


Figure 121 Adakah bangkatan mengganggu kehidupan penduduk kampung?

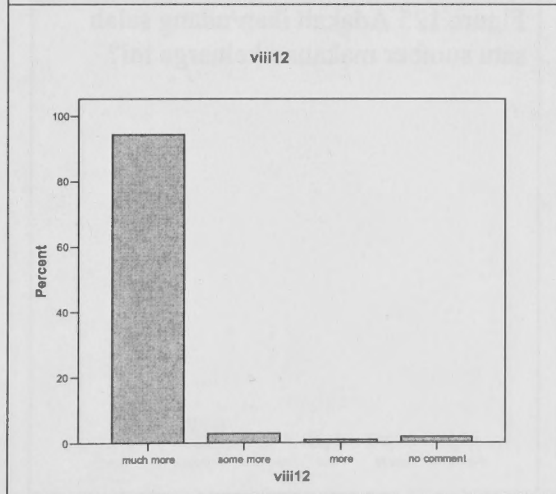


Figure 122 Adakah bangkatan salah satu tarikan pelancong di sini?

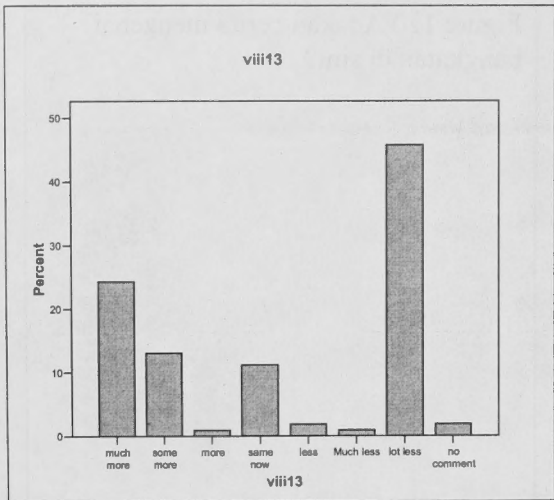


Figure 123 Adakah bangkatan salah satu sumber pendapatan keluarga ini?

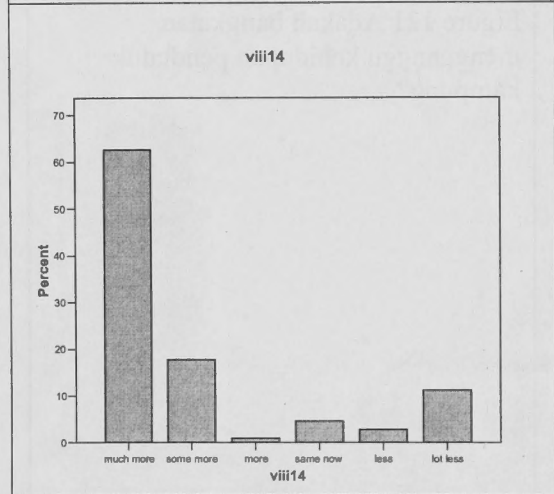


Figure 124 Adakah ikan/udang salah satu sumber pendapatan keluarga ini?

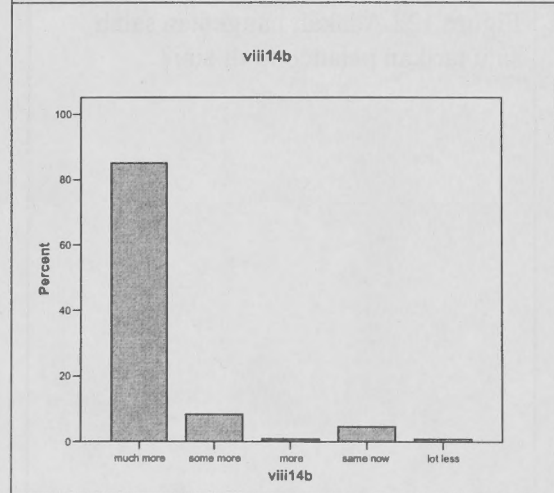


Figure 125 Adakah ikan/udang salah satu sumber makanan keluarga ini?

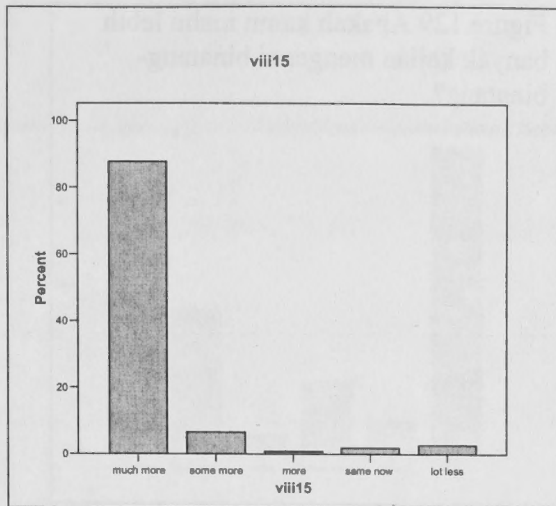


Figure 126 Adakah kamu mahu kajian kenapa ikan/udang hampir pupus?

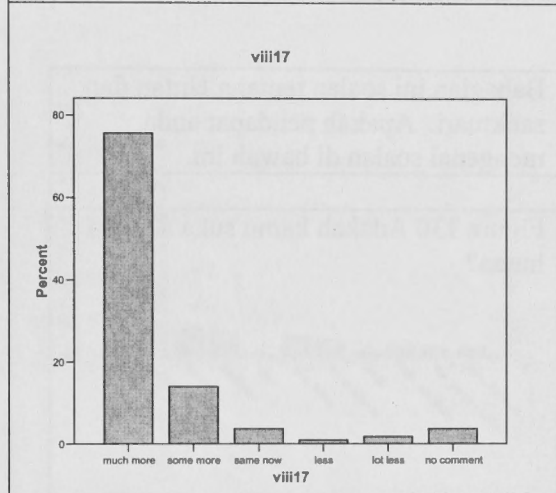


Figure 127 Apakah kamu mahu lebih banyak kajian mengenai bangkatan?

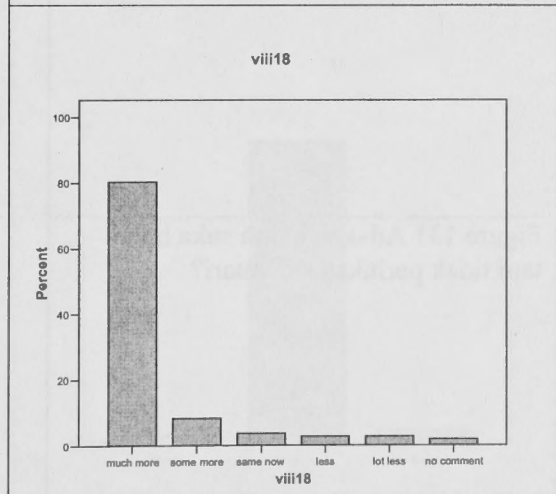


Figure 128 Apakah kamu mahu lebih banyak kajian mengenai orang utan?



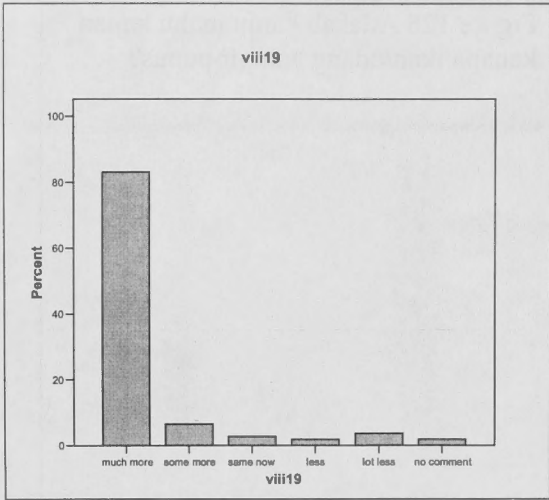
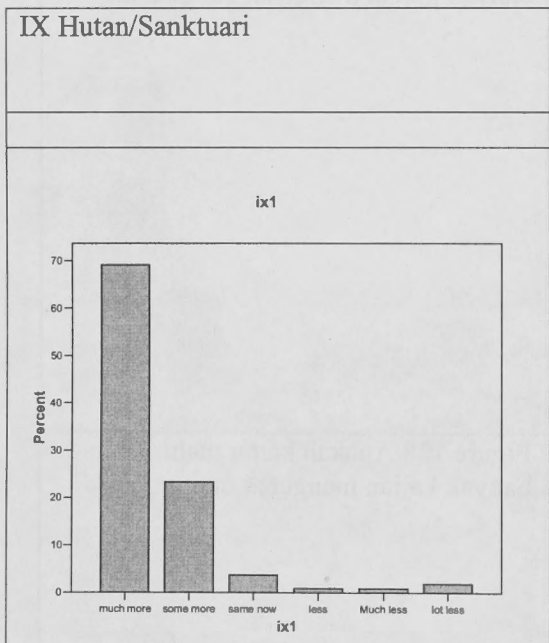


Figure 129 Apakah kamu mahu lebih banyak kajian mengenai binatang-binatang?



Bahagian ini soalan tentang Hutan dan sanktuari. Apakah pendapat anda mengenai soalan di bawah ini.

Figure 130 Adakah kamu suka adanya hutan?

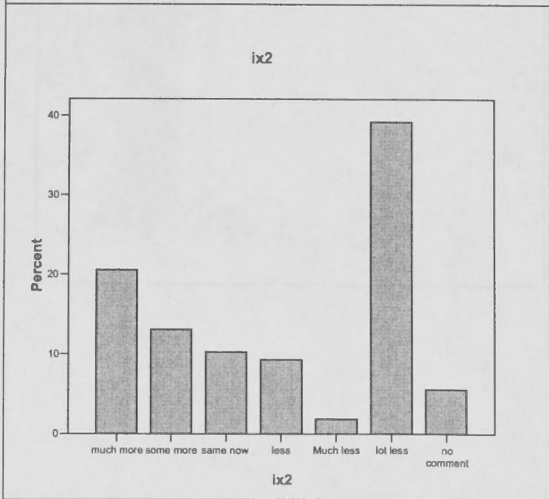


Figure 131 Adakah kamu suka hutan tapi tidak perlukan sanktuari?

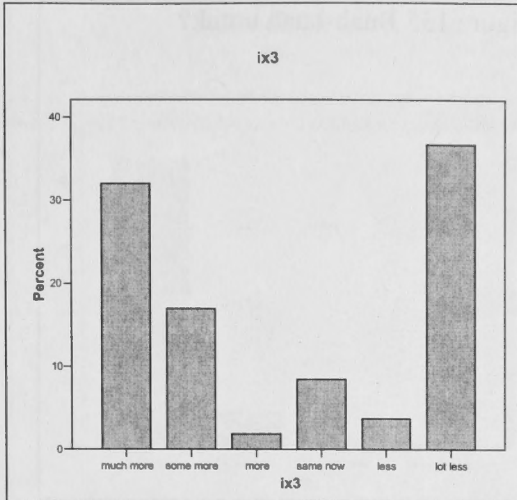


Figure 132 Adakah hutan sumber pendapatan keluarga ini?

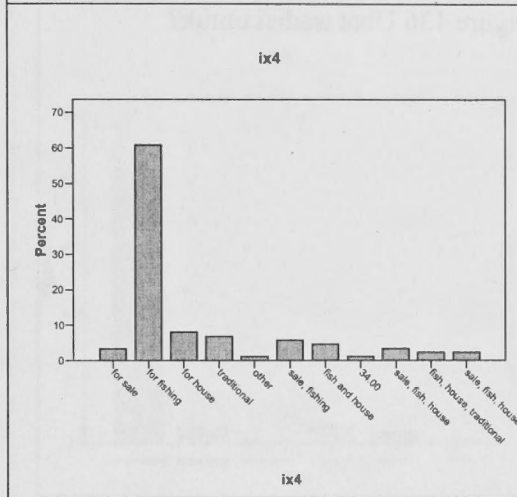


Figure 133 Seperti rotan untuk?

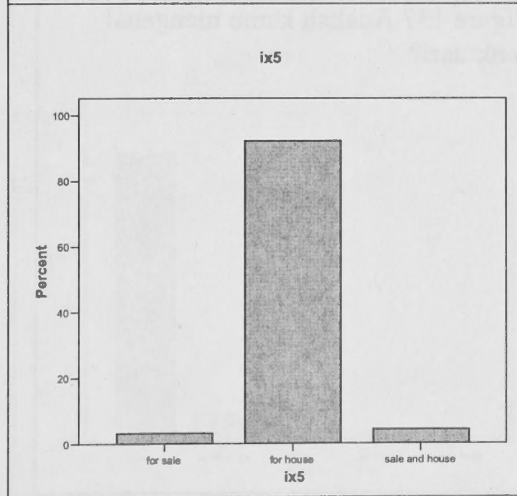


Figure 134 Kayu balak untuk?

Figure 135 Buah-buah untuk?

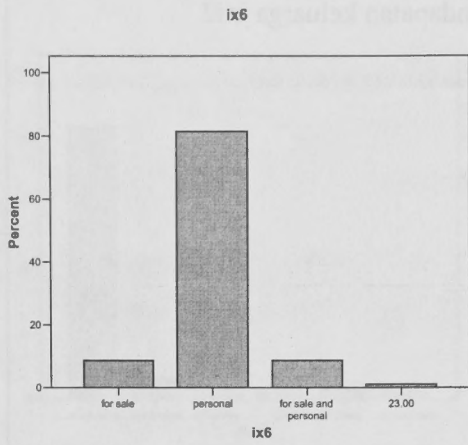


Figure 136 Ubat tradisi untuk?

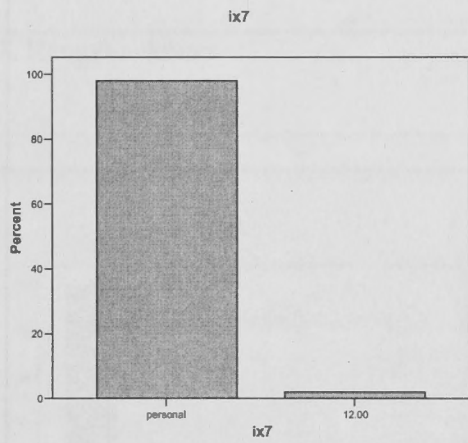
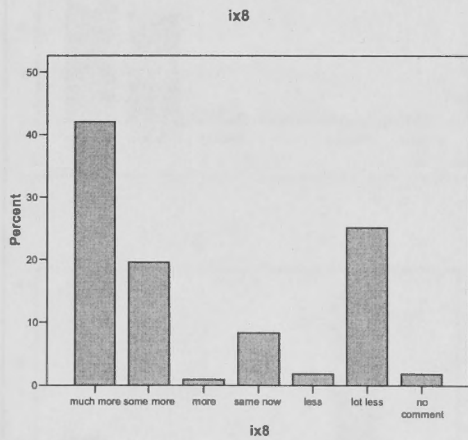


Figure 137 Adakah kamu mengenal sanktuari?



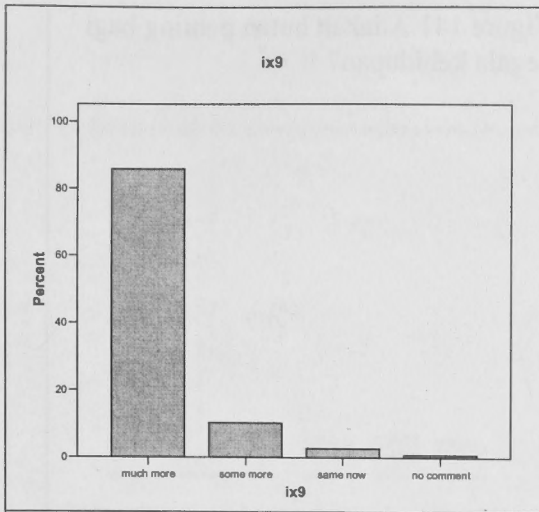


Figure 138 Adakah kamu mahu mengekalkan hutan di sini untuk generasi akan datang?

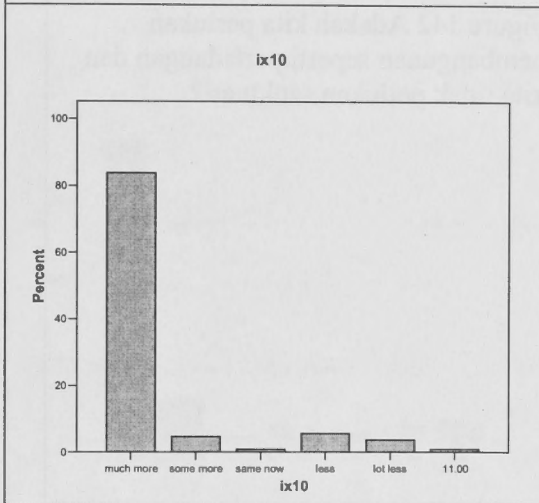


Figure 139 Sekiranya tidak ada hutan masalah akan timbul seperti angin kuat, gempa bumi, dan lain lain?

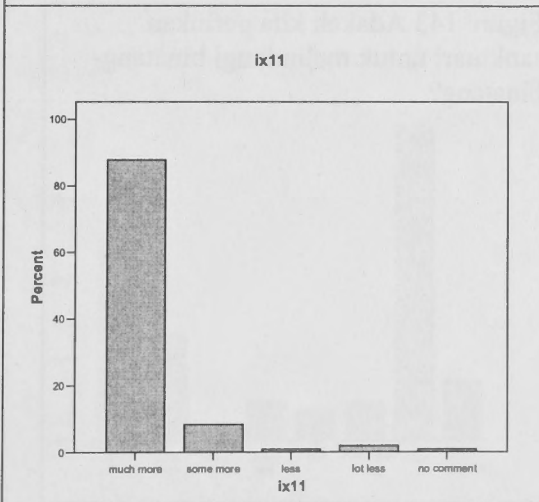


Figure 140 Adakah kamu mahu mengekalkan hutan di sini untuk tarikan pelancong?

Figure 141 Adakah hutan penting bagi segala kehidupan?

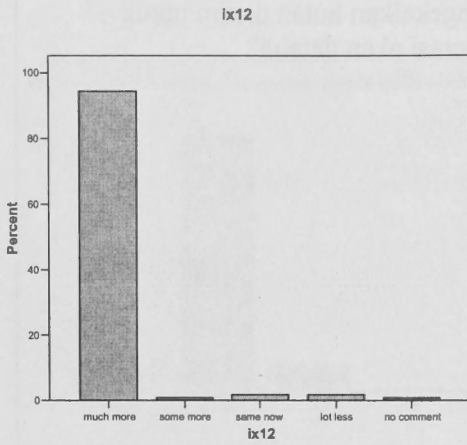


Figure 142 Adakah kita perlukan pembangunan seperti perladangan dan kita tidak perlukan sanktuari?

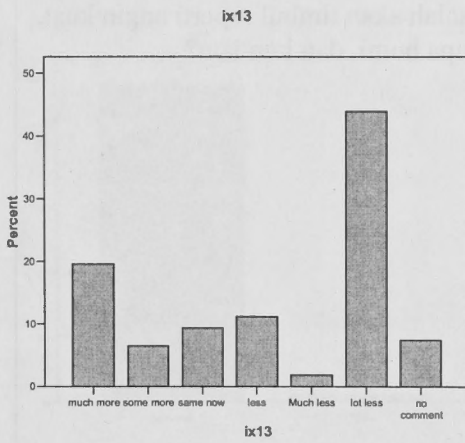


Figure 143 Adakah kita perlukan sanktuari untuk melindungi binatang-binatang?

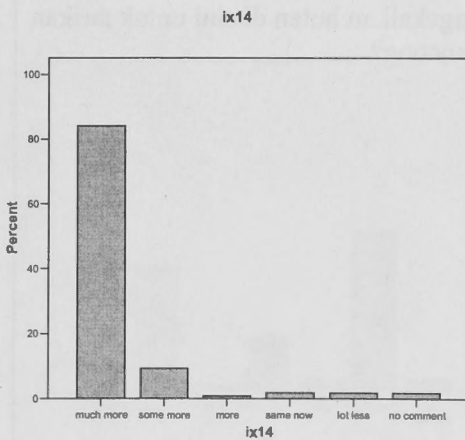


Figure 144 Adakah kamu suka dengan sanktuari?

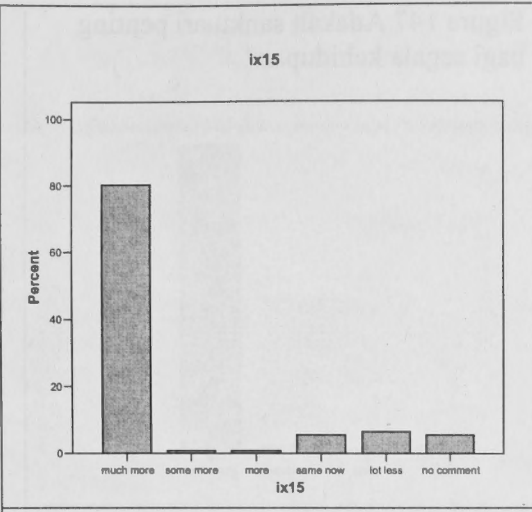


Figure 145 Adakah kamu setuju adanya sanktuari?

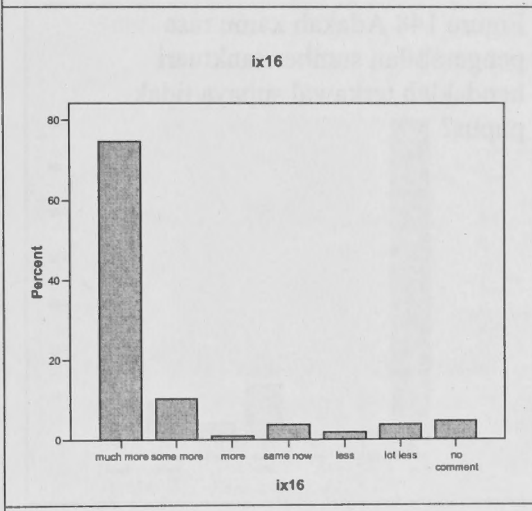
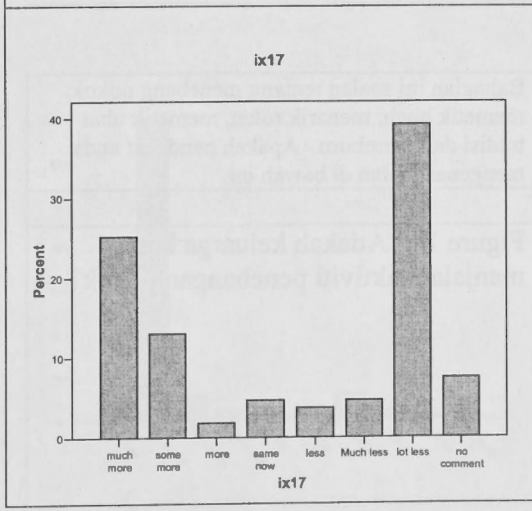


Figure 146 Adakah kamu tahu peraturan dalam sanktuari?



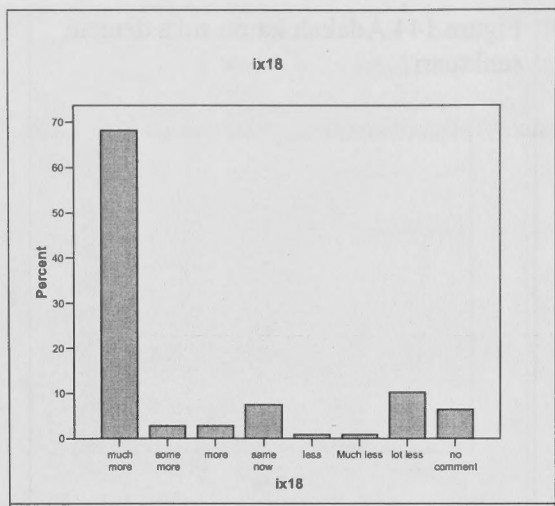


Figure 147 Adakah sanktuari penting bagi segala kehidupan?

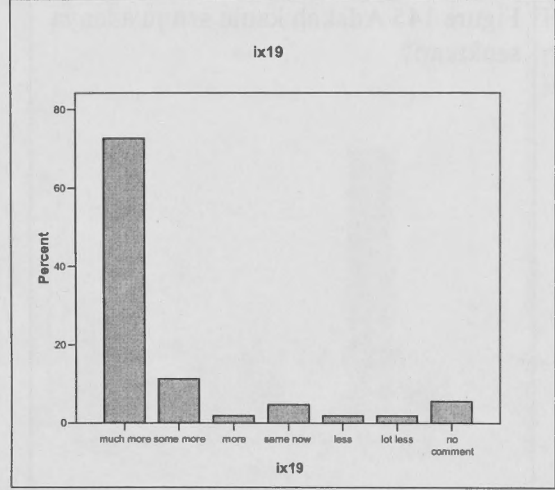


Figure 148 Adakah kamu rasa pengambilan sumber sanktuari hendaklah terkawal supaya tidak pupus?

X Menebang Pokok, Memetik Buah, Memburu

Bahagian ini soalan tentang menebang pokok, memetik buah, menarik rotan, memetik ubat tradisi dan memburu. Apakah pendapat anda mengenai soalan di bawah ini.

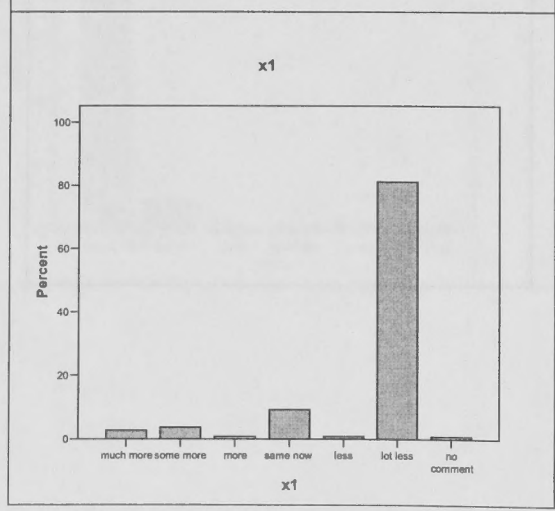


Figure 149 Adakah keluarga kamu menjalani aktiviti penebangan pokok?

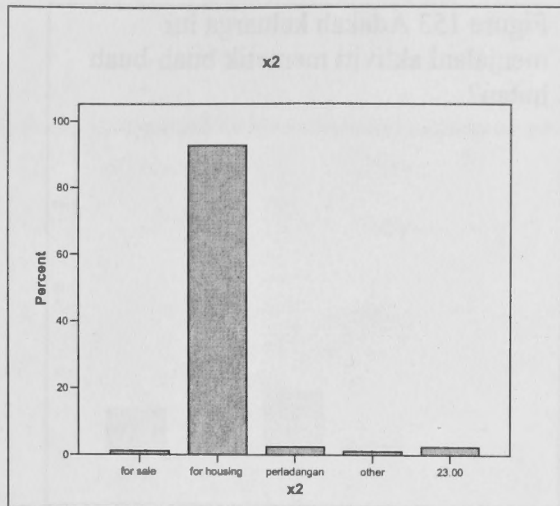


Figure 150 Adakah keluarga ini menebang pokok untuk?

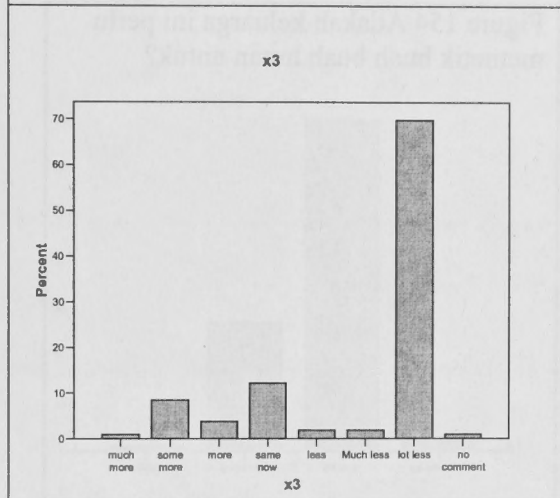


Figure 151 Adakah keluarga kamu menjalani aktiviti mencari rotan?

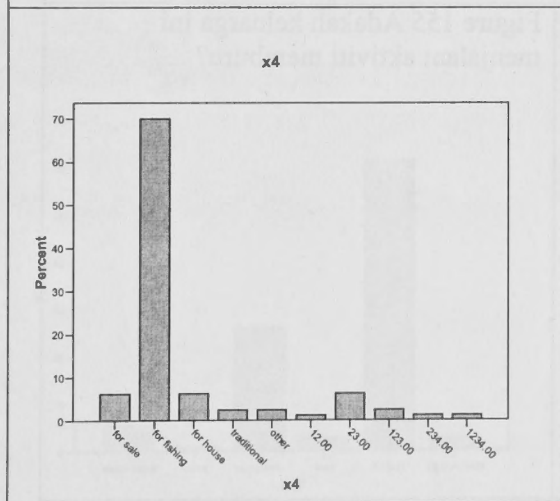


Figure 152 Adakah keluarga ini perlu mencari rotan untuk?



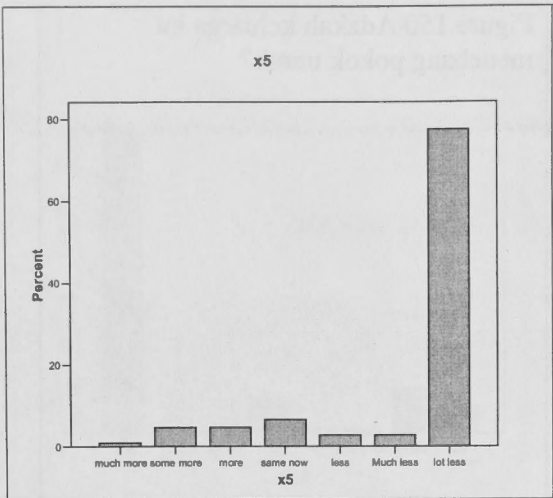


Figure 153 Adakah keluarga ini menjalani aktiviti memetik buah-buah hutan?

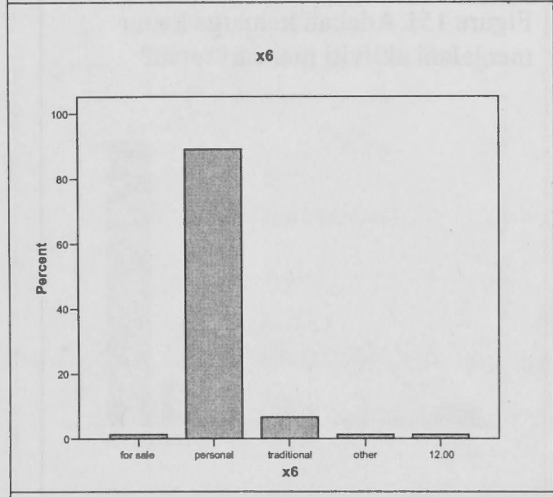


Figure 154 Adakah keluarga ini perlu memetik buah buah hutan untuk?

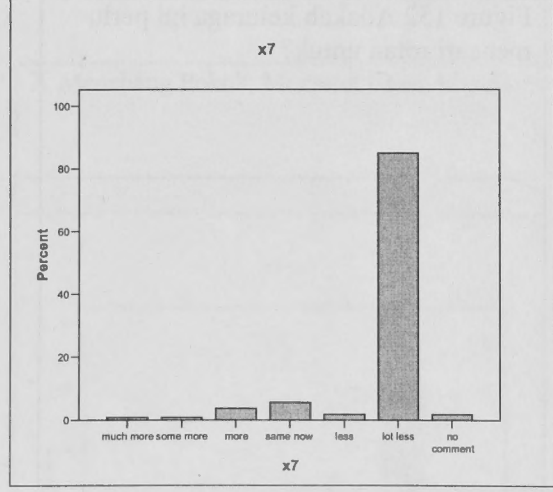


Figure 155 Adakah keluarga ini menjalani aktiviti memburu?

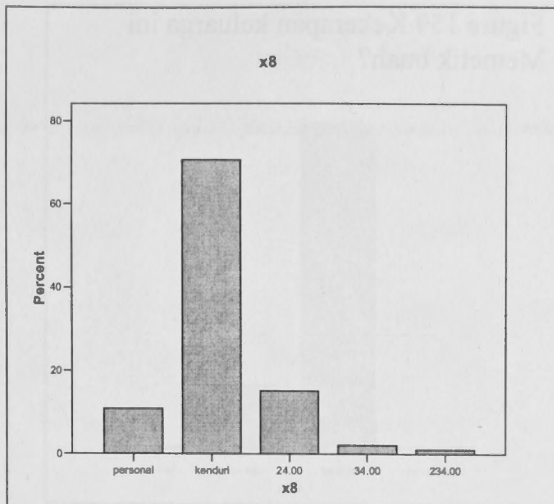


Figure 156 Adakah keluarga ini perlu memburu untuk?

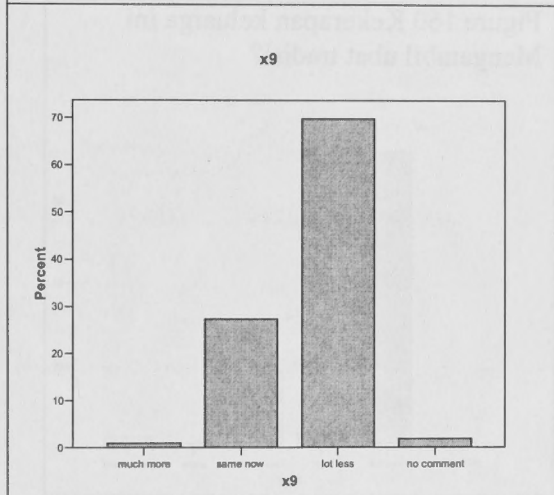


Figure 157 Kekerapan keluarga ini Menebang pokok?

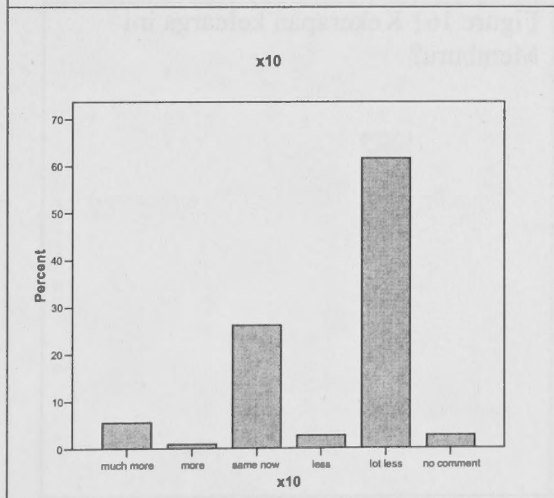


Figure 158 Kekerapan keluarga ini Mencari rotan?

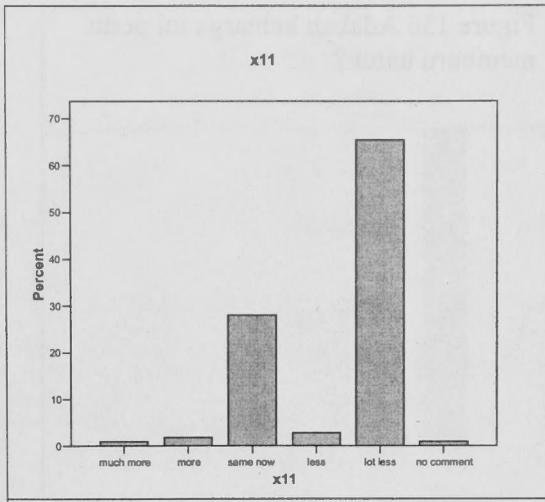


Figure 159 Kekerapan keluarga ini Memetik buah?

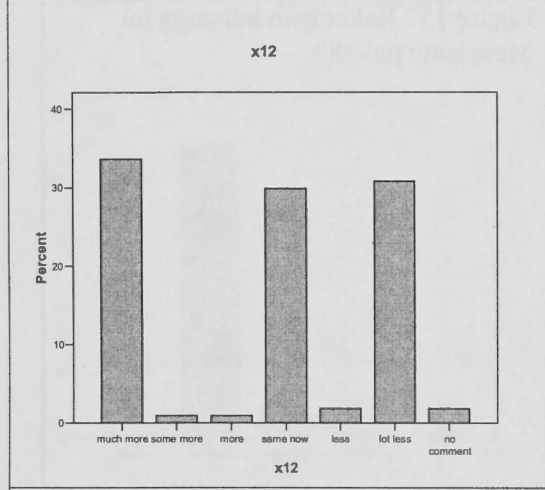


Figure 160 Kekerapan keluarga ini Mengambil ubat tradisi?

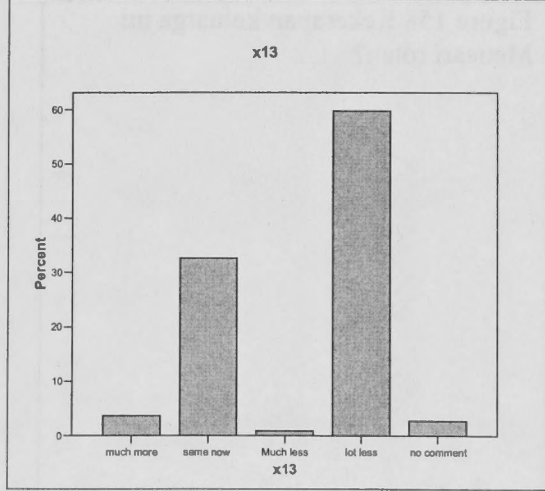


Figure 161 Kekerapan keluarga ini Memburu?

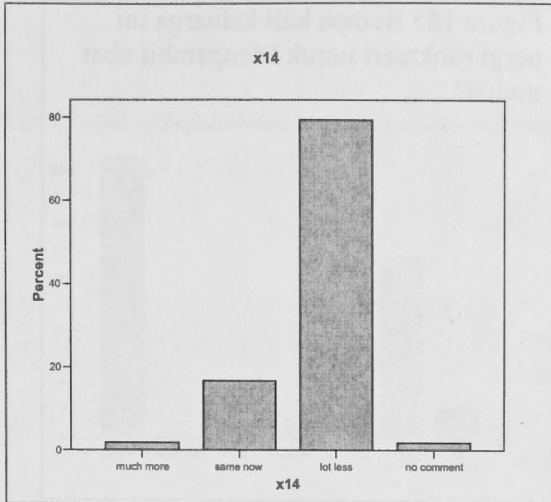


Figure 162 Berapa kali keluarga ini pergi sanktuari untuk Menebang pokok?

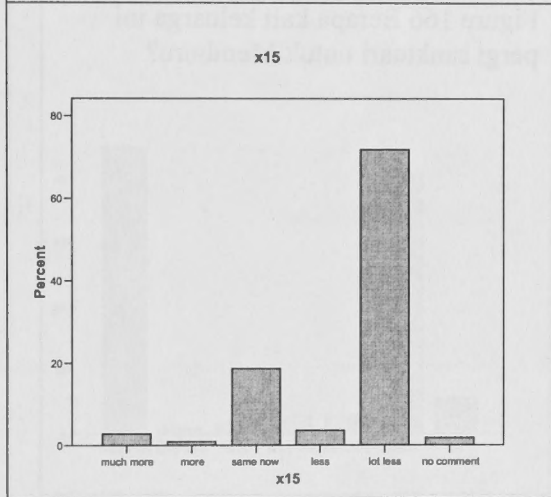


Figure 163 Berapa kali keluarga ini pergi sanktuari untuk Mencari rotan?

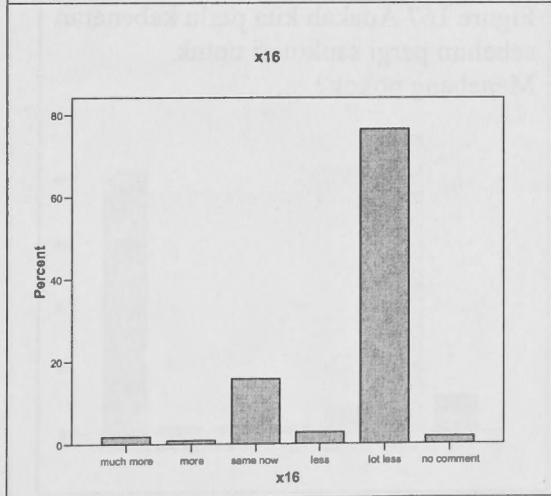


Figure 164 Berapa kali keluarga ini pergi sanktuari untuk Memetik buah?

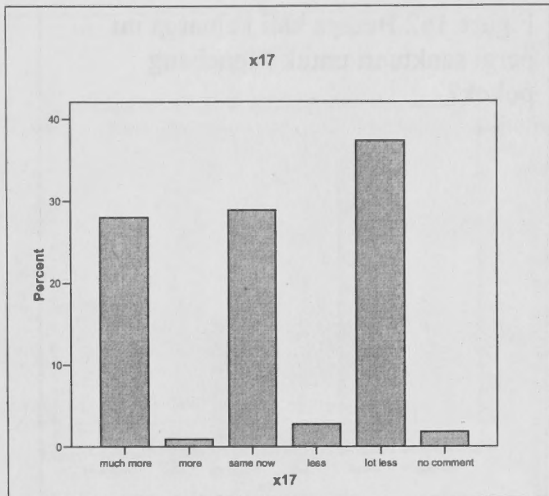


Figure 165 Berapa kali keluarga ini pergi sanktuari untuk Mengambil obat tradisi?

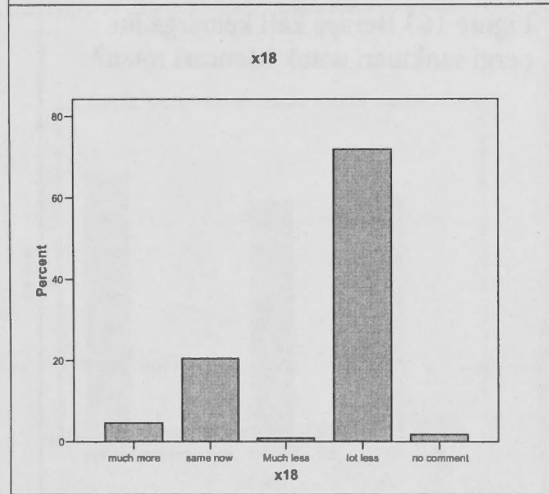


Figure 166 Berapa kali keluarga ini pergi sanktuari untuk Memburu?

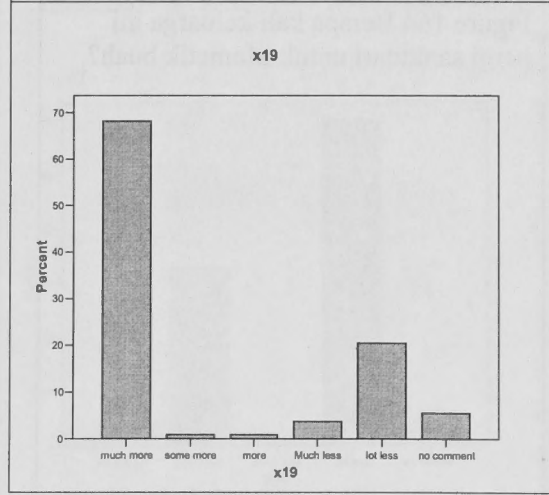


Figure 167 Adakah kita perlu kebenaran sebelum pergi sanktuari untuk Menebang pokok?

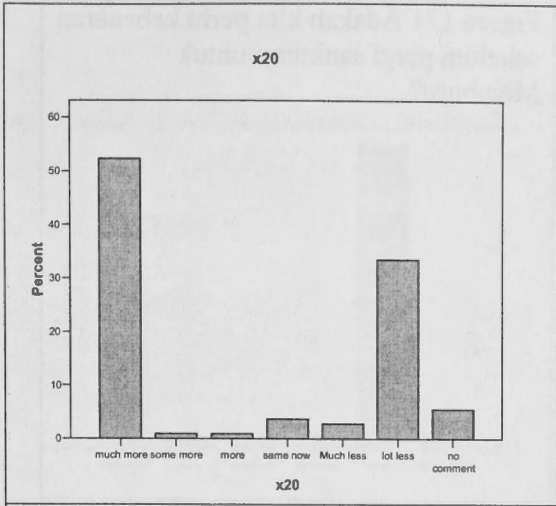


Figure 168 Adakah kita perlu kebenaran sebelum pergi sanktuari untuk Mencari rotan?

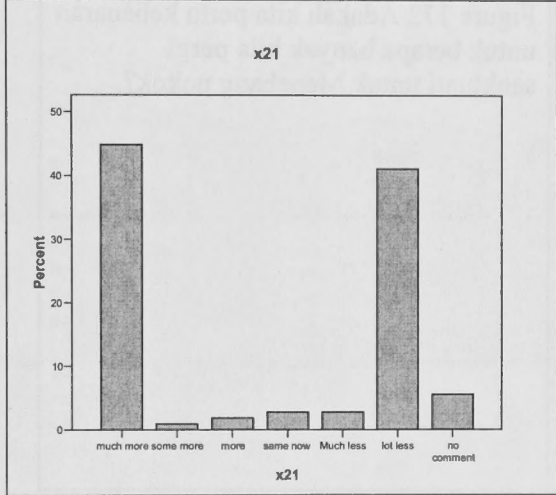


Figure 169 Adakah kita perlu kebenaran sebelum pergi sanktuari untuk Memetik buah?

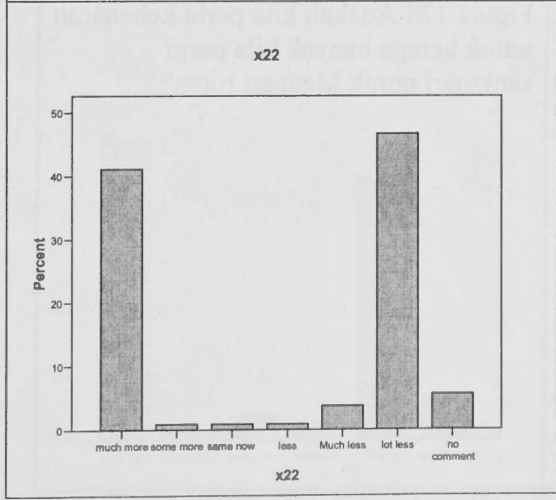


Figure 170 Adakah kita perlu kebenaran sebelum pergi sanktuari untuk Mengambil ubat tradisi?

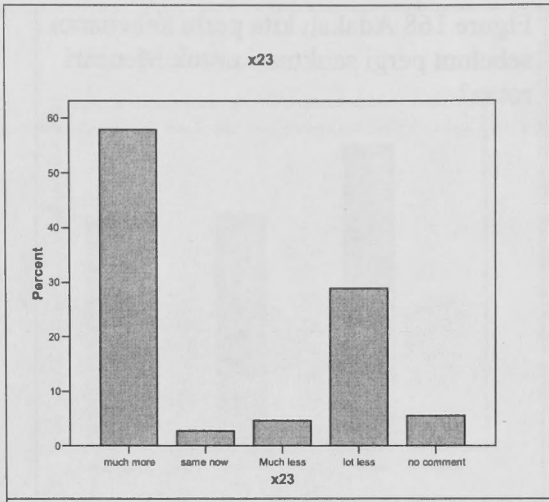


Figure 171 Adakah kita perlu kebenaran sebelum pergi sanktuari untuk Memburu?

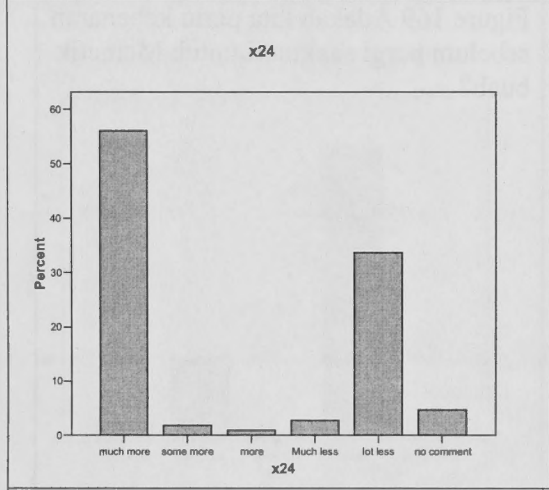


Figure 172 Adakah kita perlu kebenaran untuk berapa banyak bila pergi sanktuari untuk Menebang pokok?

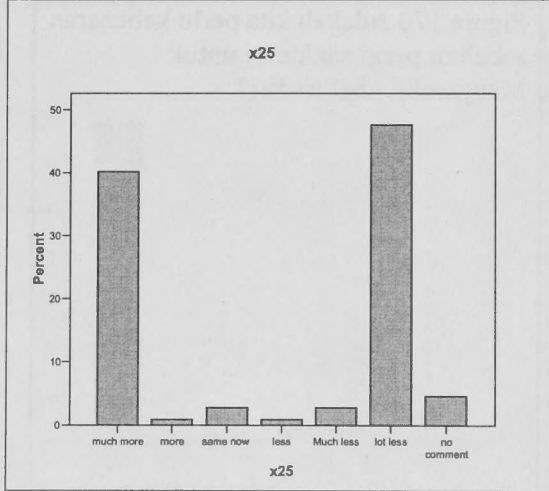


Figure 173 Adakah kita perlu kebenaran untuk berapa banyak bila pergi sanktuari untuk Mencari rotan?

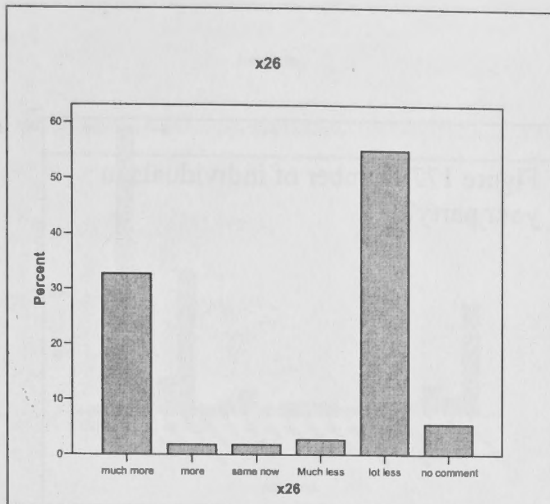


Figure 174 Adakah kita perlu kebenaran untuk berapa banyak bila pergi sanktuari untuk Memetik buah?

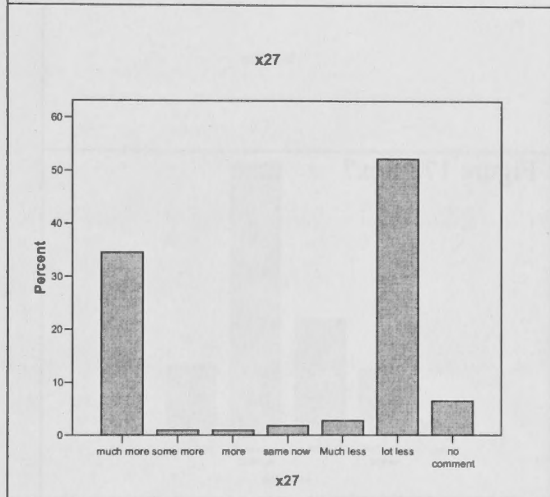


Figure 175 Adakah kita perlu kebenaran untuk berapa banyak bila pergi sanktuari untuk Memetik ubat tradisi?

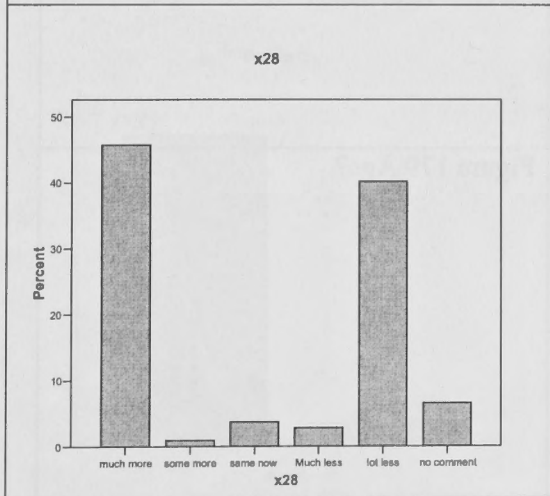


Figure 176 Adakah kita perlu kebenaran untuk berapa banyak bila pergi sanktuari untuk Memburu?



## Part 8 Tourist Survey Results

### Demographics

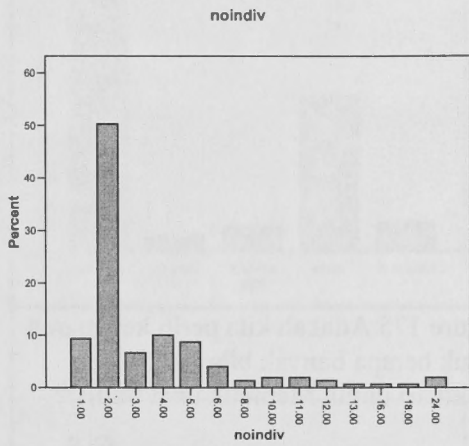


Figure 177 Number of individuals in your party?

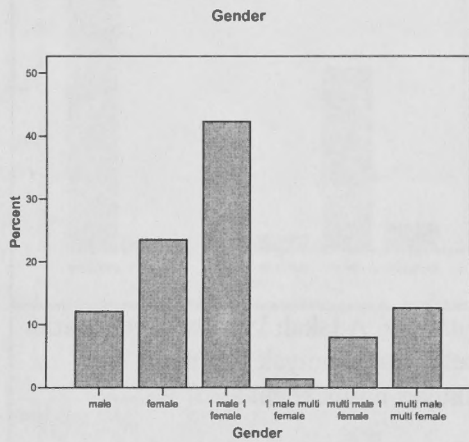


Figure 178 Sex?

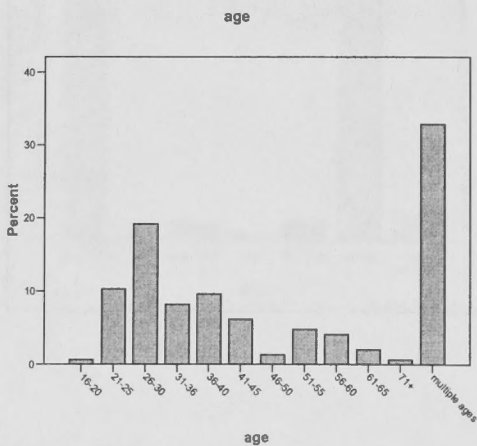


Figure 179 Age?

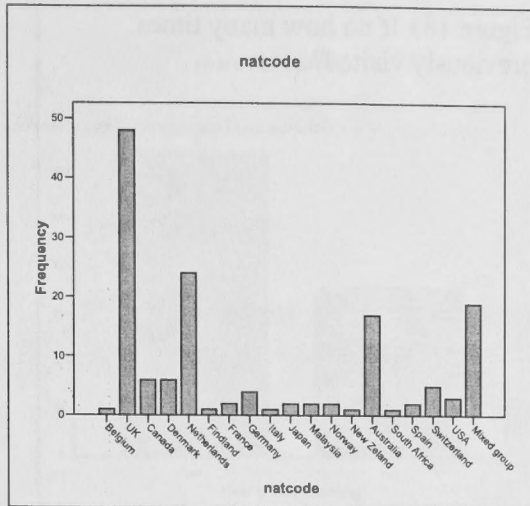


Figure 180 Nationality(ies)?

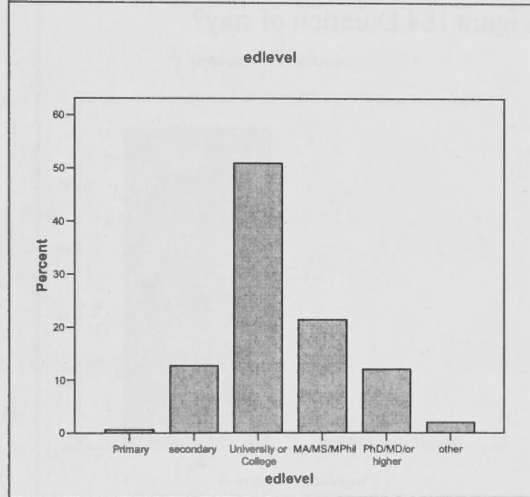


Figure 181 Highest level of education obtained by any member of the family travelling here?

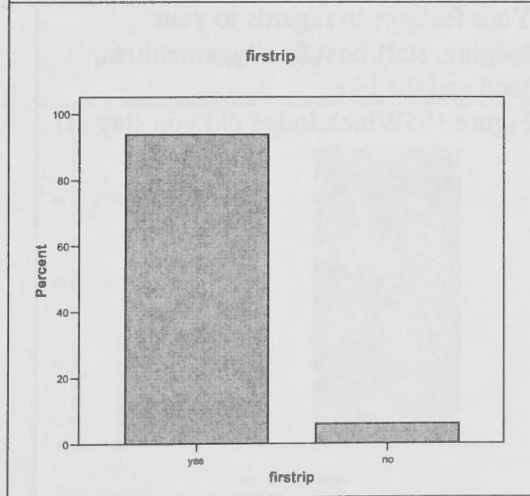


Figure 182 Is this your first trip to Sukau?

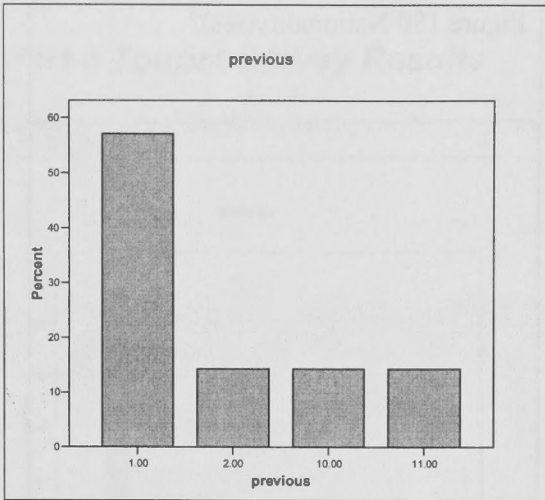


Figure 183 If no how many times previously visited?

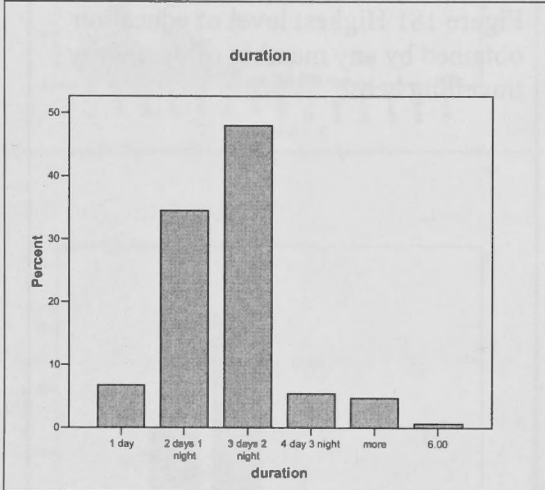


Figure 184 Duration of stay?

Accommodation

Your feelings in regards to your lodging, staff/host family, amenities, food and the like.

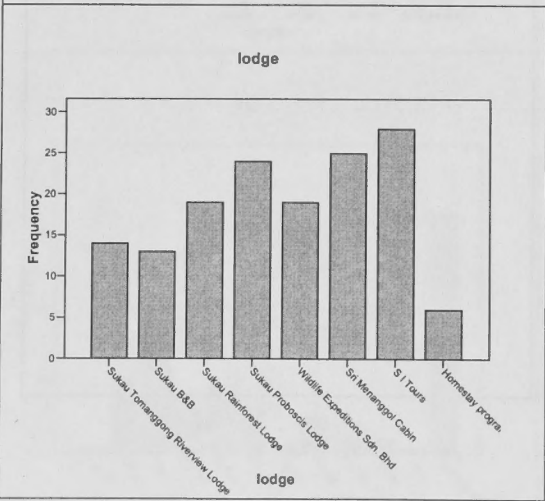


Figure 185 Which lodge did you stay at?

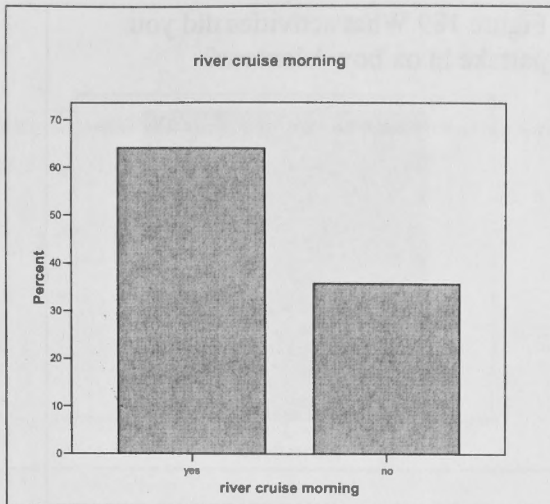


Figure 186 What activities did you partake in river cruise morning?

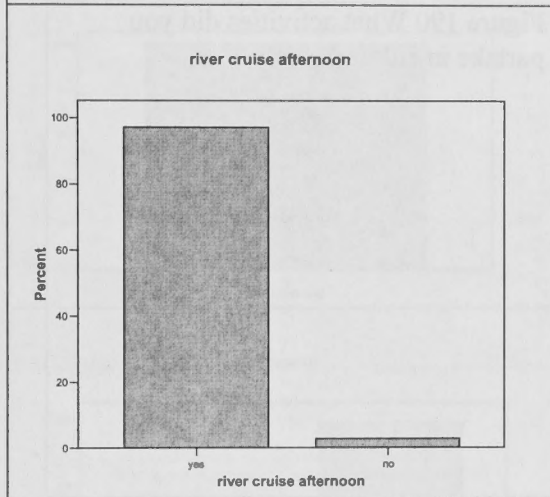


Figure 187 What activities did you partake in river cruise afternoon?

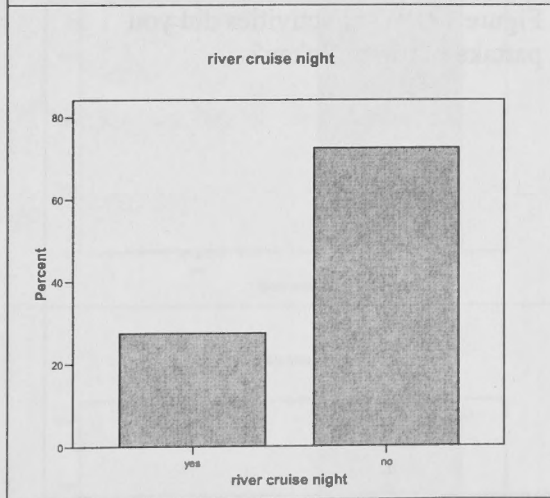


Figure 188 What activities did you partake in river cruise night?

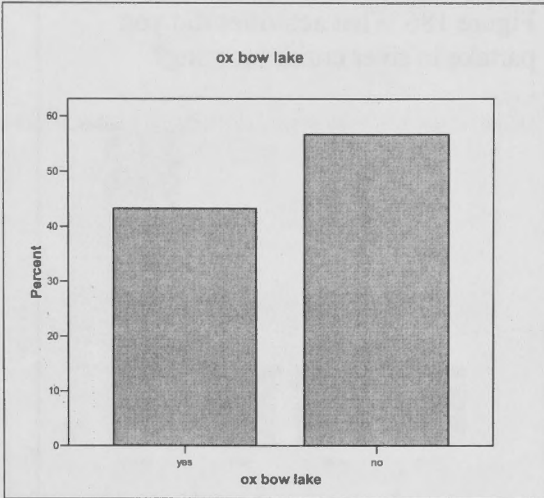


Figure 189 What activities did you partake in ox bow lake tour?

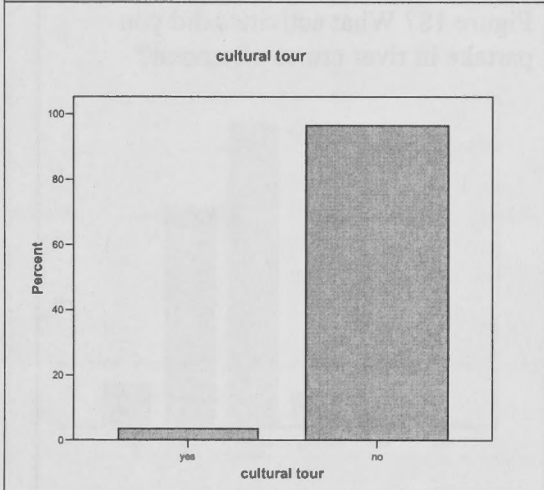


Figure 190 What activities did you partake in cultural tour?

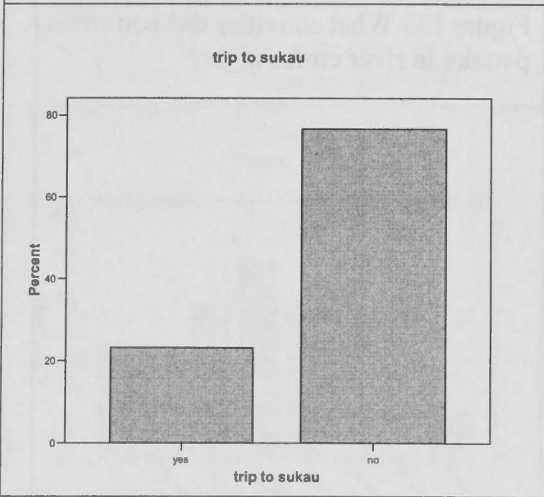


Figure 191 What activities did you partake in trip to Sukau?

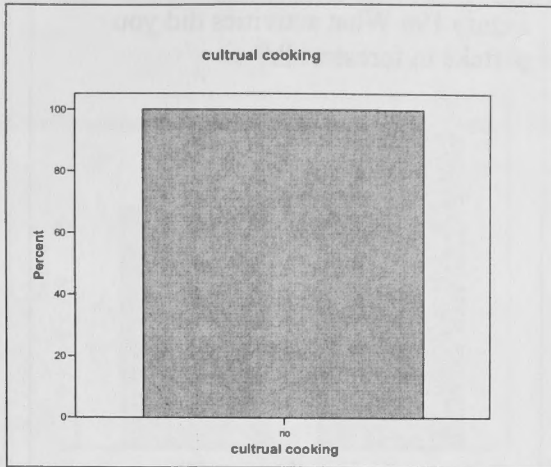


Figure 192 What activities did you partake in cultural cooking program?

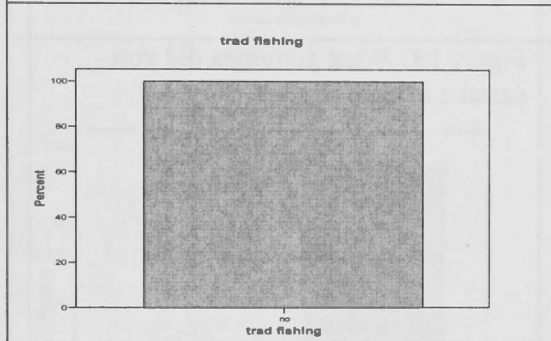


Figure 193 What activities did you partake in traditional fishing program?

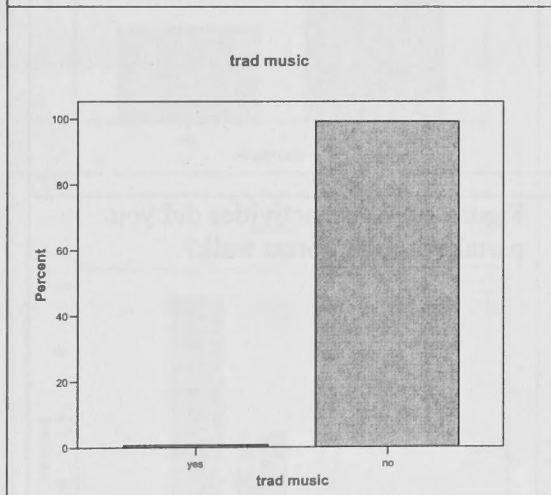


Figure 194 What activities did you partake in traditional music program?

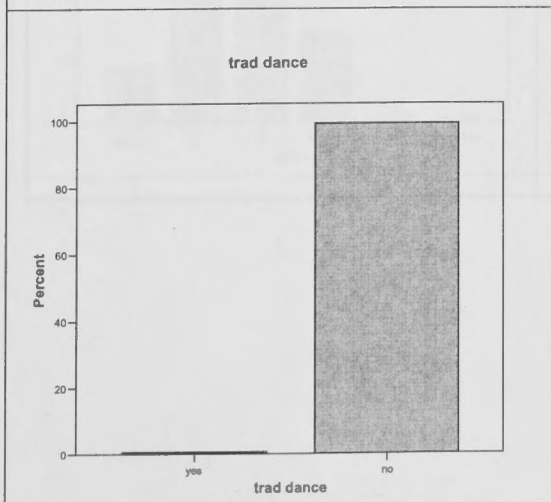


Figure 195 What activities did you partake in traditional dance program?

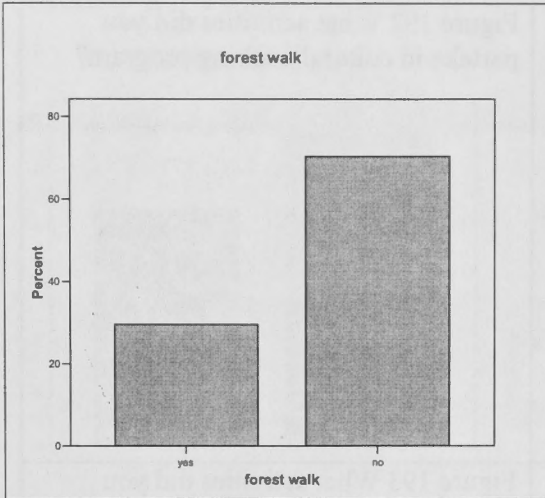


Figure 196 What activities did you partake in forest walk?

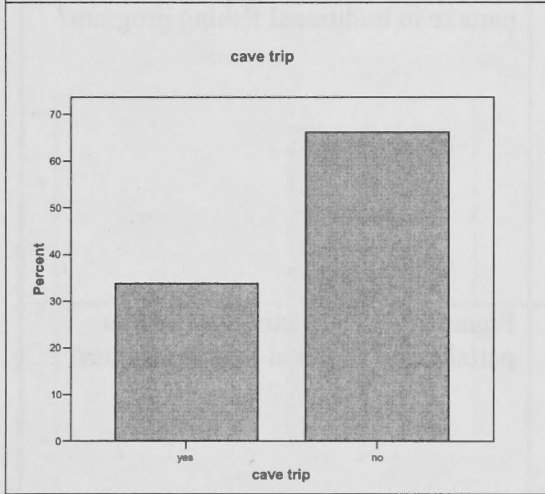


Figure 197 What activities did you partake in cave trip?

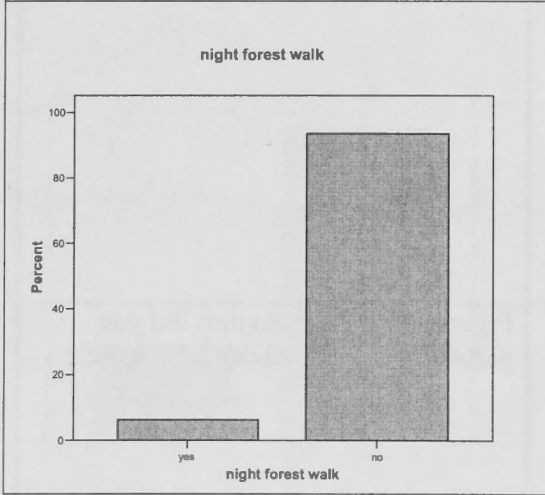


Figure 198 What activities did you partake in night forest walk?

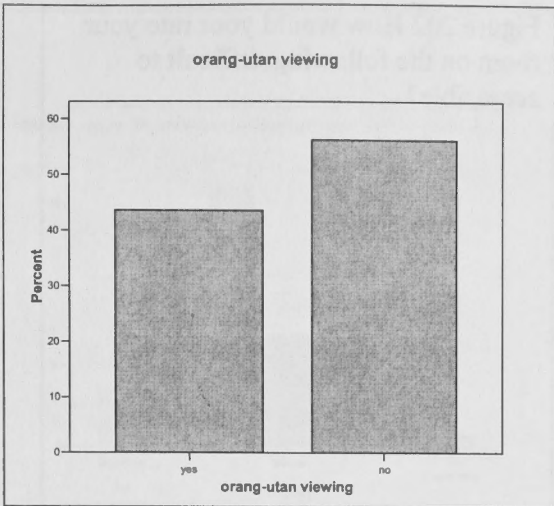


Figure 199 What activities did you partake in orang-utan viewing?

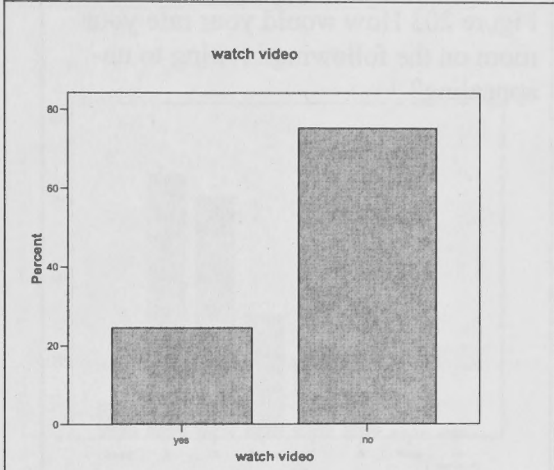


Figure 200 What activities did you partake in watch video?

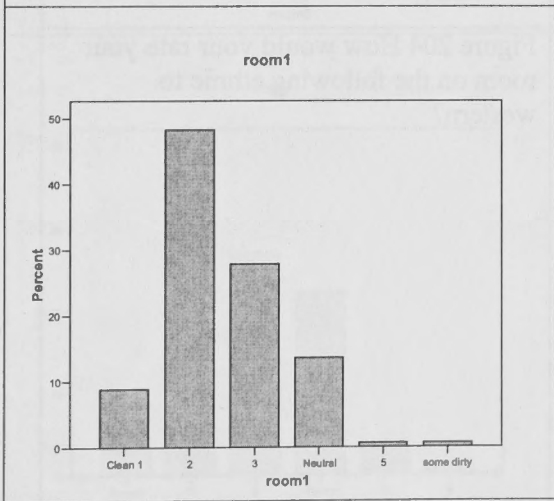


Figure 201 How would your rate your room on the following clean to dirty?



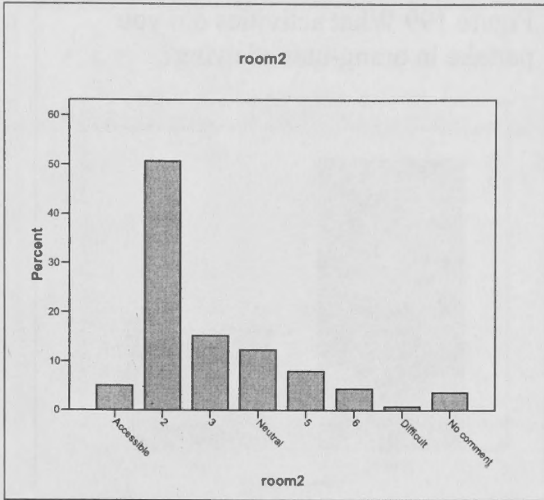


Figure 202 How would your rate your room on the following difficult to accessible?

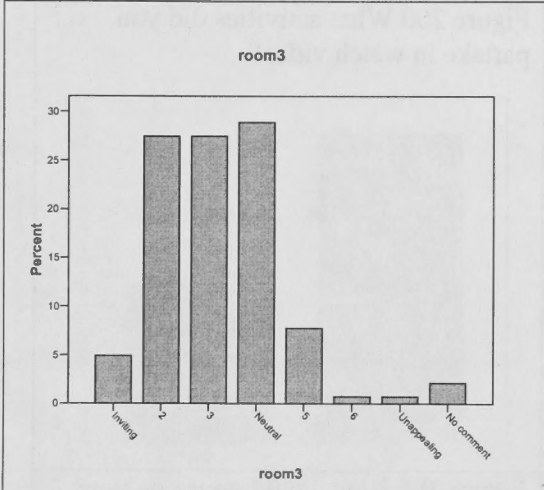


Figure 203 How would your rate your room on the following inviting to unappealing?

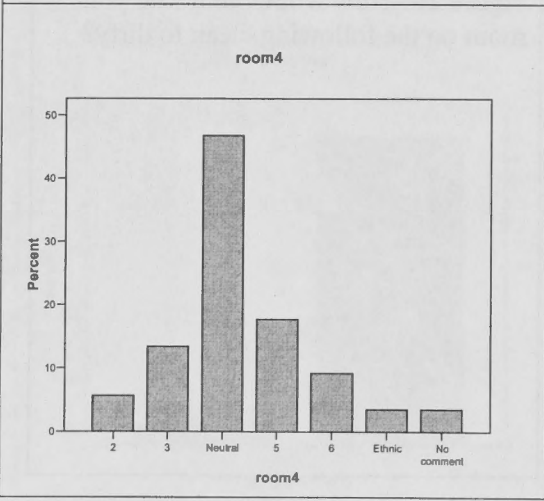


Figure 204 How would you rate your room on the following ethnic to western?

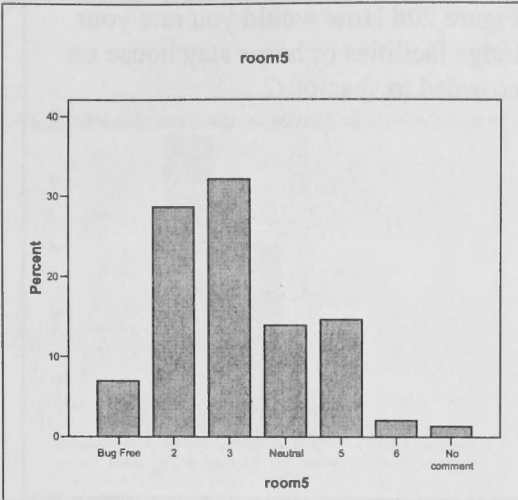


Figure 205 How would your rate your room on the following buggy to bug free?

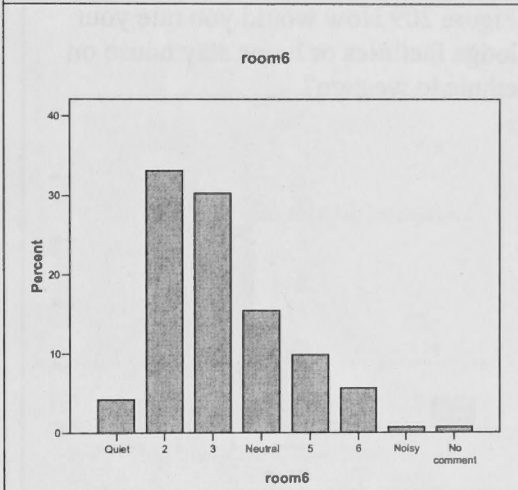


Figure 206 How would your rate your room on the following noisy to quiet?

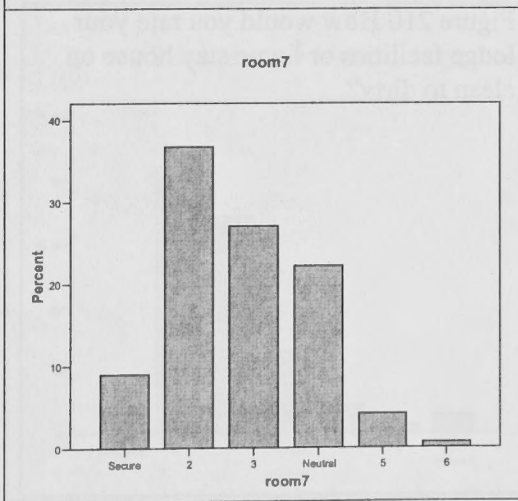


Figure 207 How would your rate your room on the following secure to un-safe?

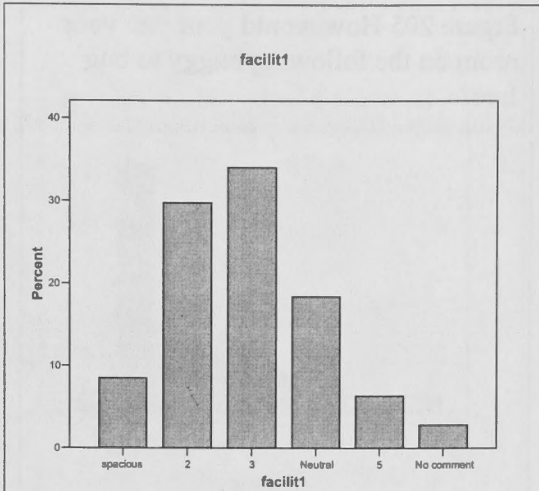


Figure 208 How would you rate your lodge facilities or home stay house on crowded to spacious?

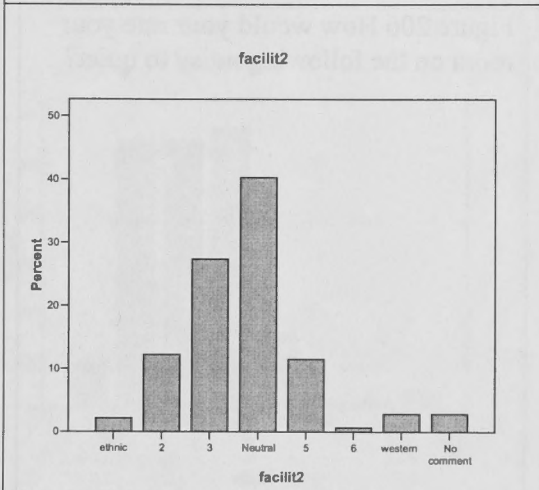


Figure 209 How would you rate your lodge facilities or home stay house on ethnic to western?

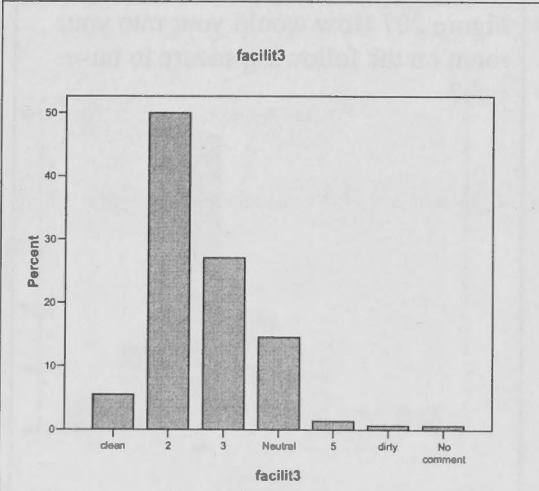


Figure 210 How would you rate your lodge facilities or home stay house on clean to dirty?

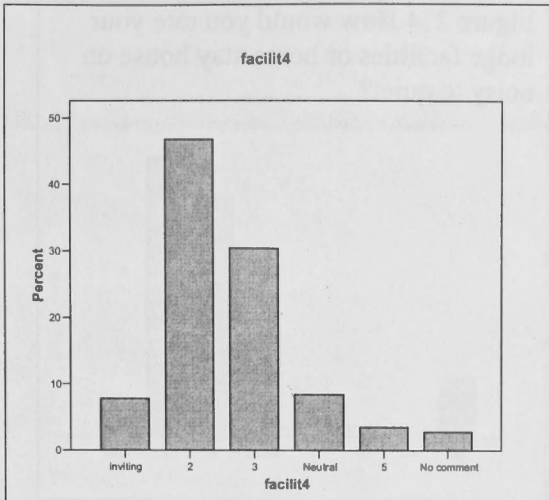


Figure 211 How would you rate your lodge facilities or home stay house on inviting to unappealing?

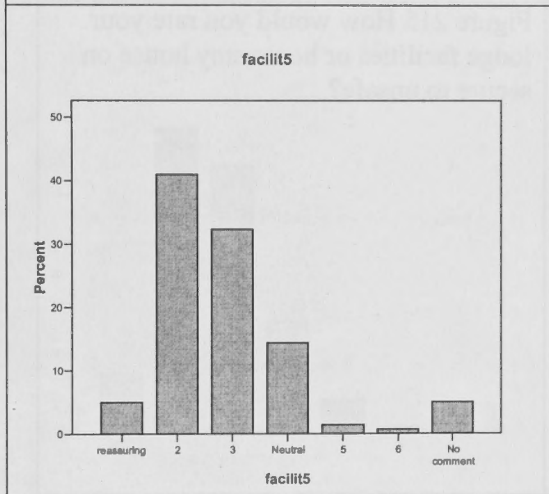


Figure 212 How would you rate your lodge facilities or home stay house on reassuring to unsettling?

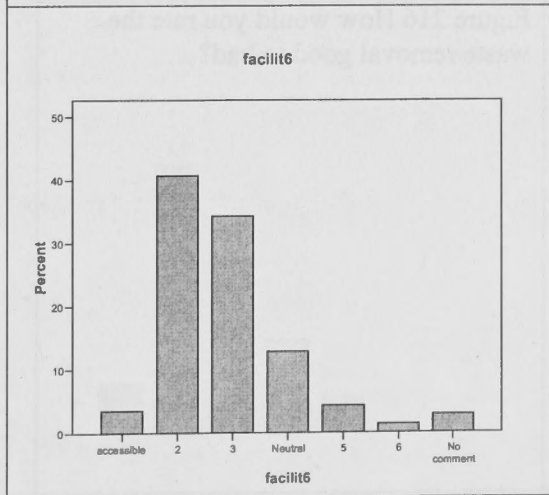


Figure 213 How would you rate your lodge facilities or home stay house on accessible to difficult?

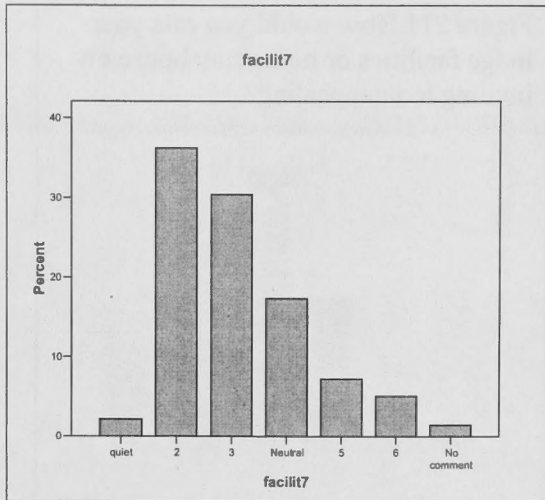


Figure 214 How would you rate your lodge facilities or home stay house on noisy to quiet?

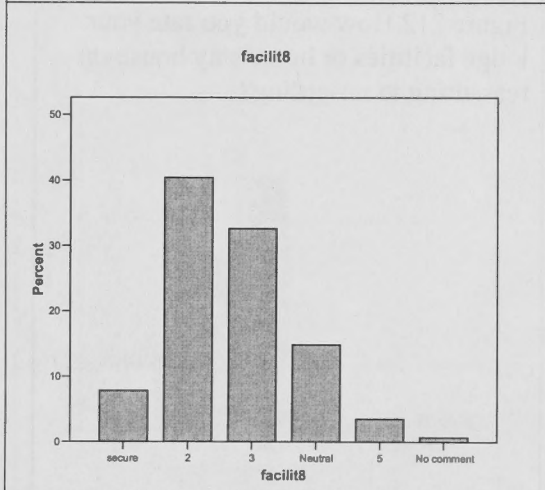


Figure 215 How would you rate your lodge facilities or home stay house on secure to unsafe?

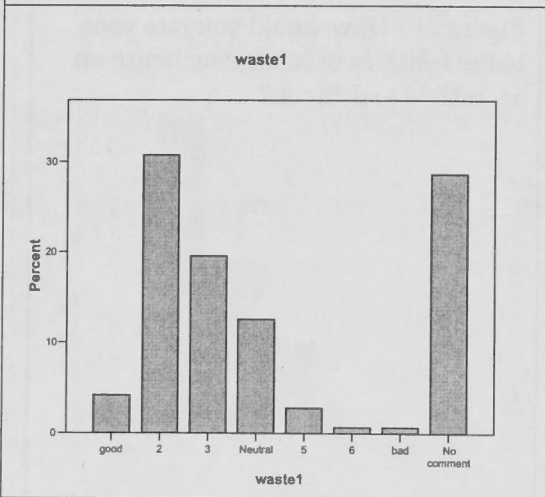


Figure 216 How would you rate the waste removal good to bad?

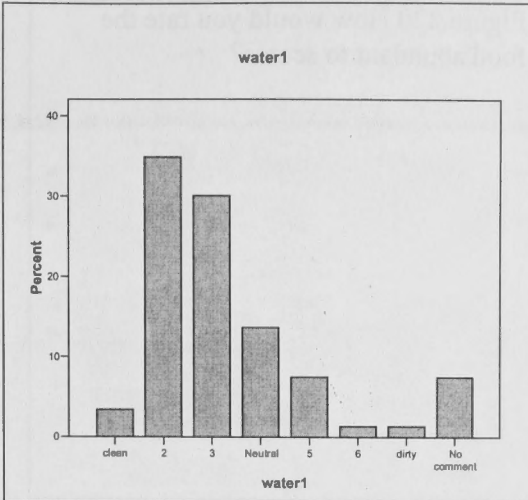


Figure 217 How would you rate the water in the room clean to dirty?

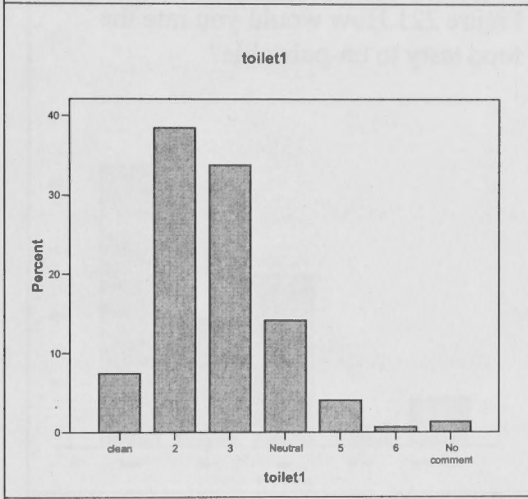


Figure 218 How would you rate the toilet facilities clean to dirty?

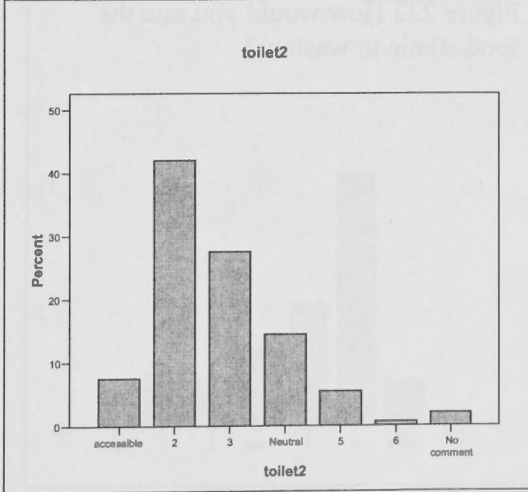


Figure 219 How would you rate the toilet facilities accessible to difficult?

Figure 220 How would you rate the food abundant to scarce?

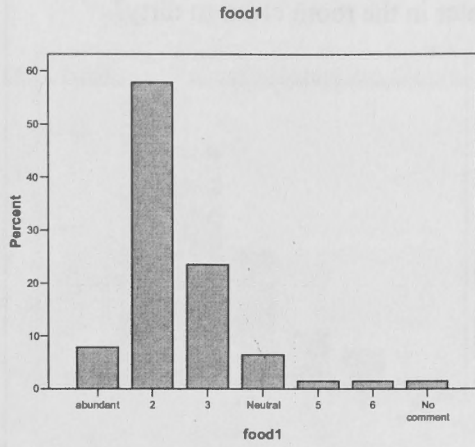


Figure 221 How would you rate the food tasty to un-palatable?

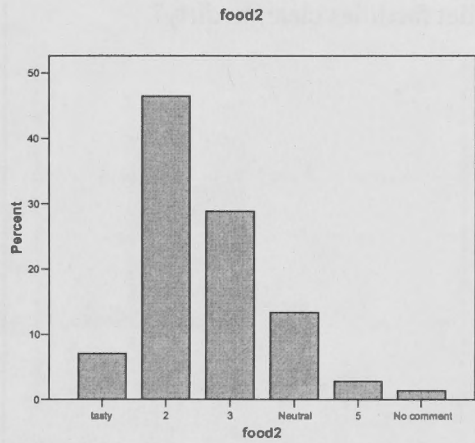
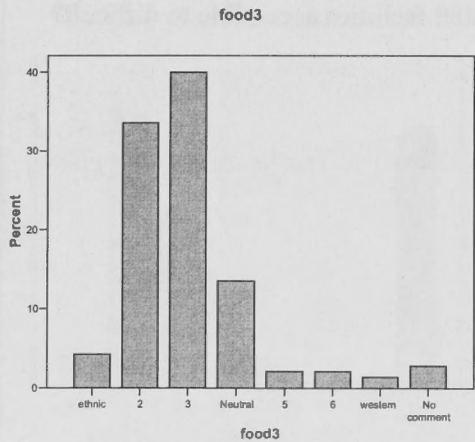


Figure 222 How would you rate the food ethnic to western?



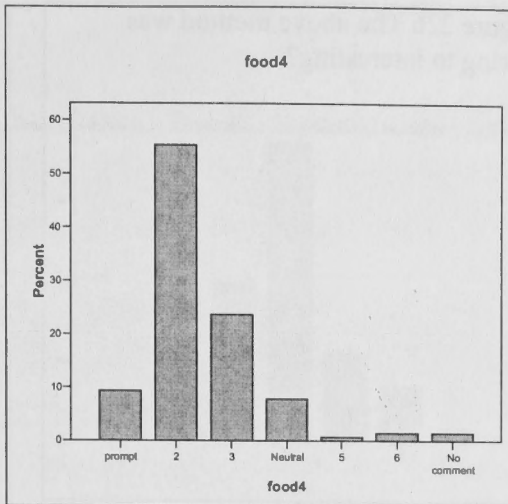


Figure 223 How would you rate the food prompt to slow?

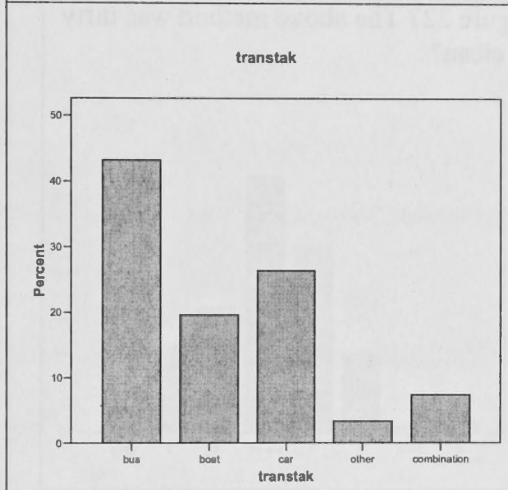


Figure 224 Transport take to sukau?

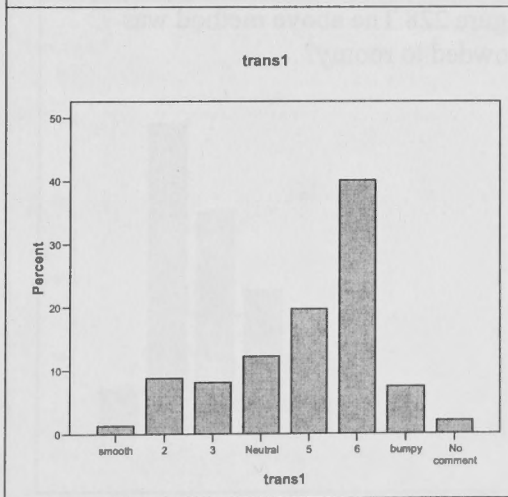


Figure 225 The above method was bumpy to smooth?



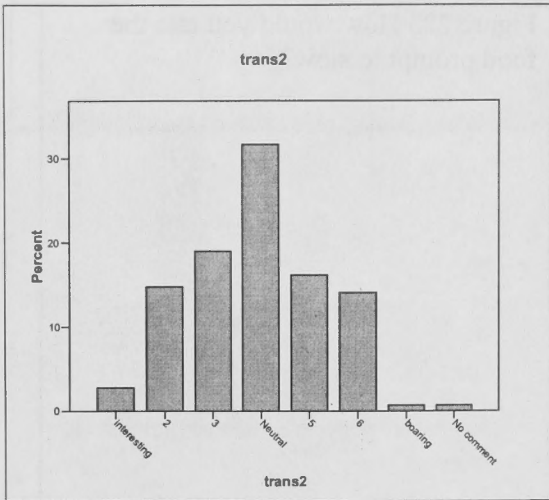


Figure 226 The above method was boring to interesting?

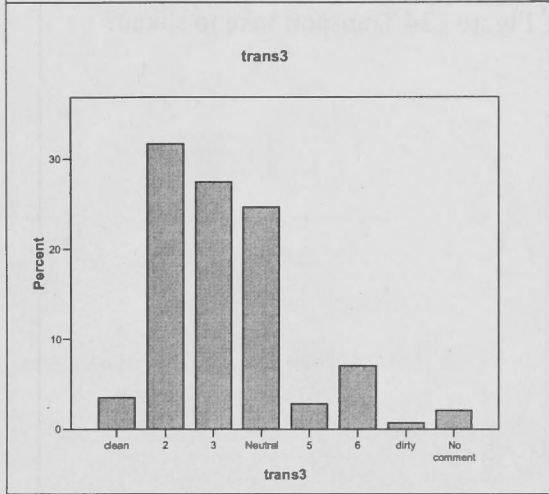


Figure 227 The above method was dirty to clean?

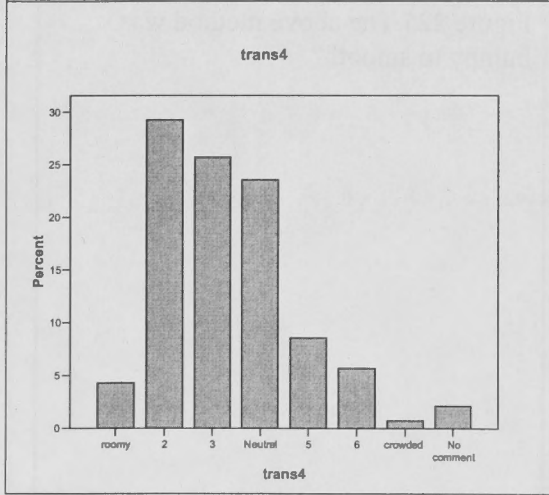


Figure 228 The above method was crowded to roomy?

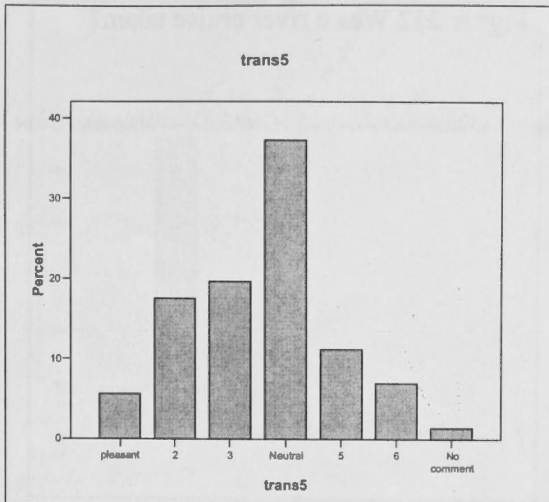


Figure 229 The above method was painful/uncomfortable to pleasant/comfortable?

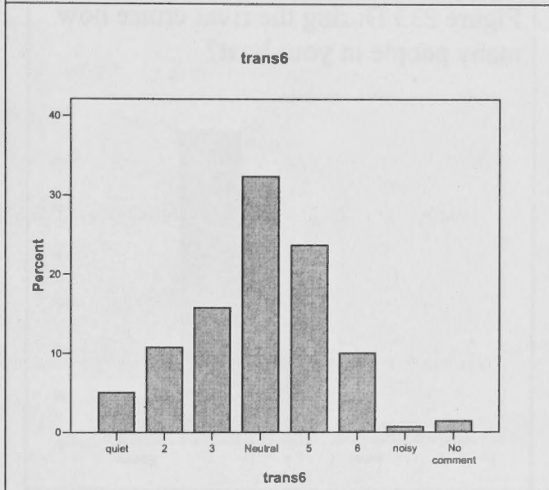


Figure 230 The above method was noisy to quiet?

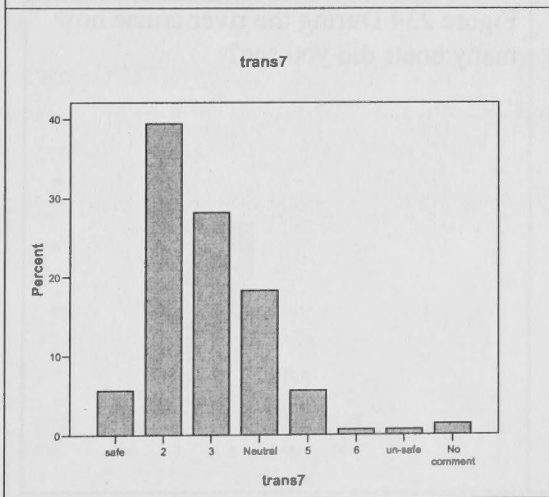


Figure 231 The above method was safe to un safe?

Figure 232 Was a river cruise taken?

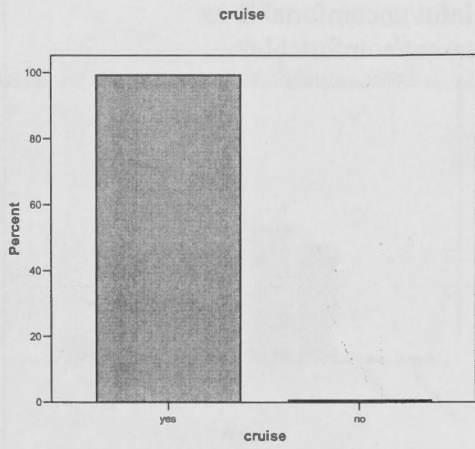


Figure 233 During the river cruise how many people in your boat?

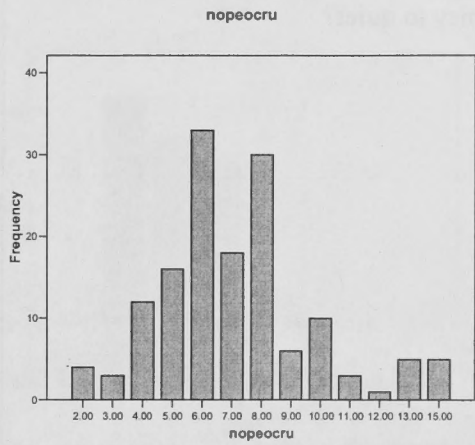
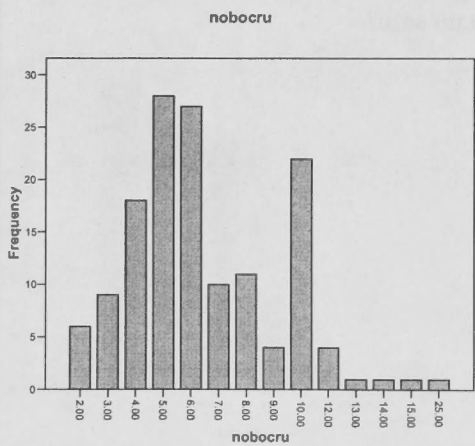


Figure 234 During the river cruise how many boats did you see?



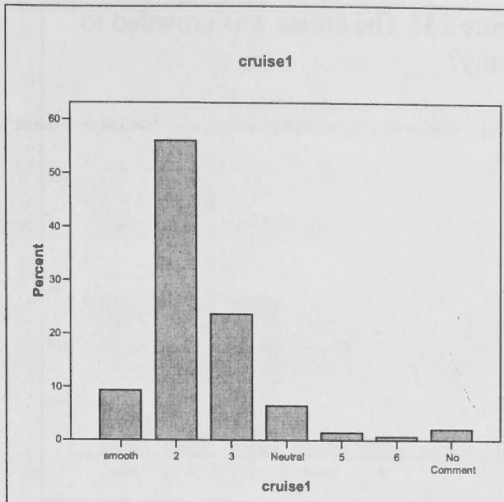


Figure 235 The river cruise was bumpy to smooth?

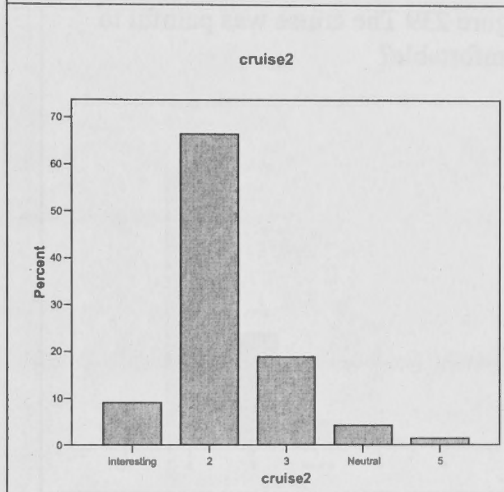


Figure 236 The cruise was boring to interesting?

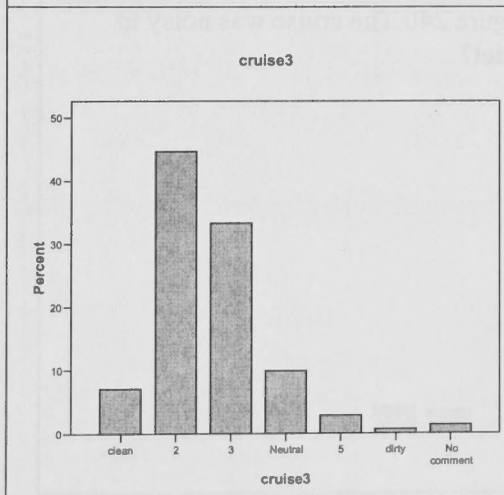


Figure 237 The cruise was dirty to clean?

Figure 238 The cruise was crowded to roomy?

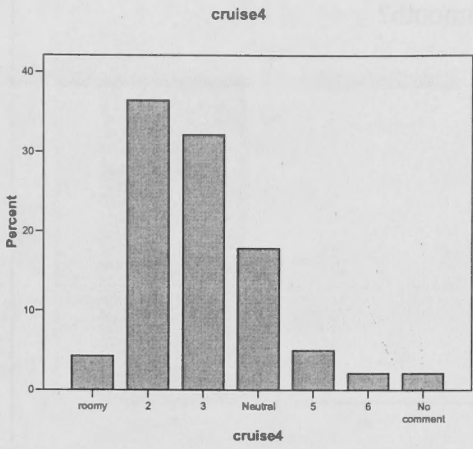


Figure 239 The cruise was painful to comfortable?

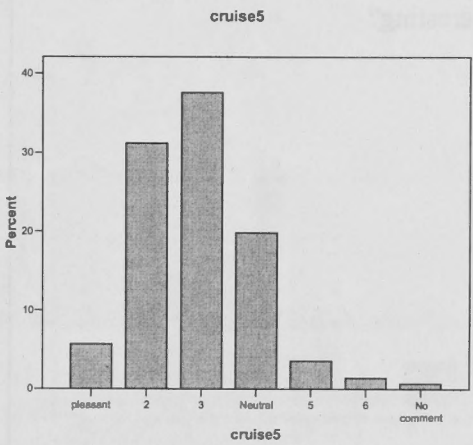
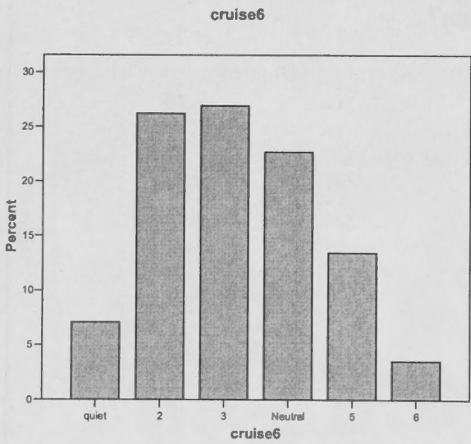


Figure 240 The cruise was noisy to quiet?



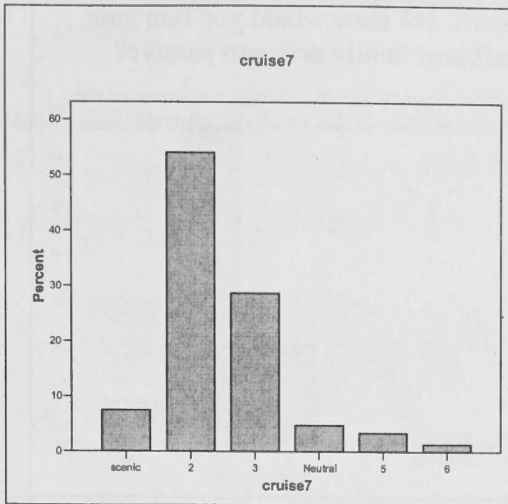


Figure 241 The cruise was scenic to monotonous?

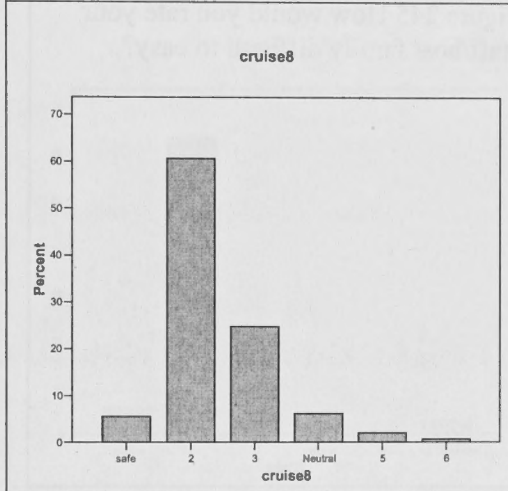


Figure 242 The cruise was safe to unsafe?

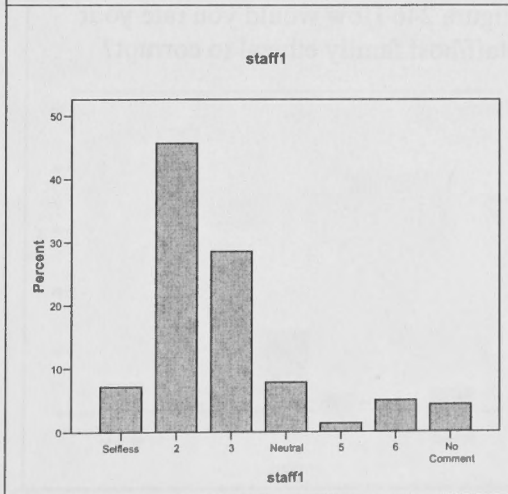


Figure 243 How would you rate your staff/host family selfish to selfless?

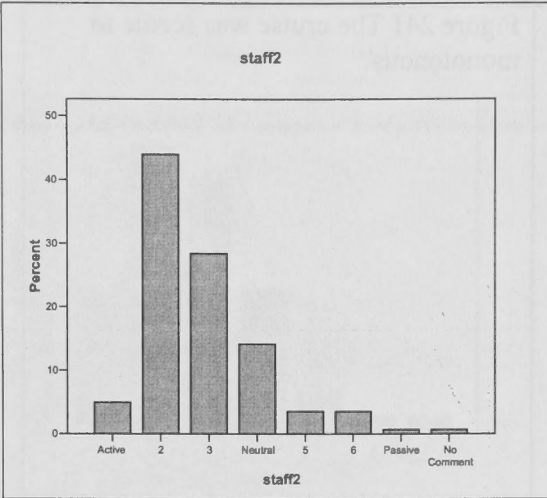


Figure 244 How would you rate your staff/host family active to passive?

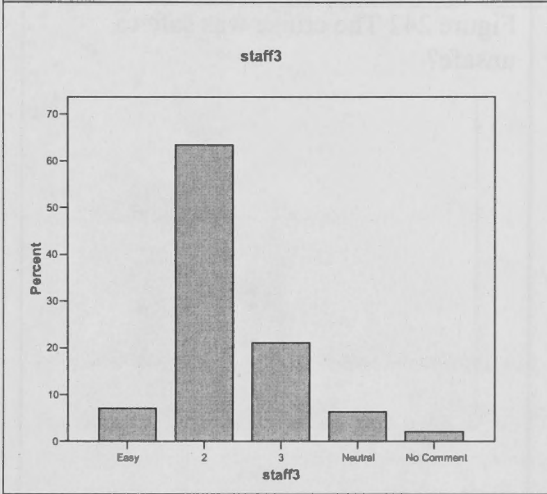


Figure 245 How would you rate your staff/host family difficult to easy?

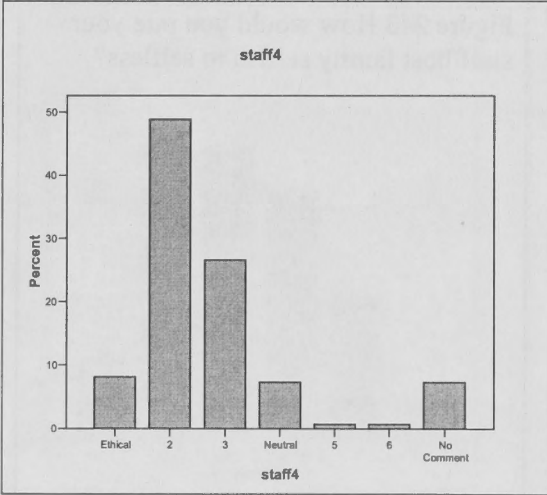


Figure 246 How would you rate your staff/host family ethical to corrupt?

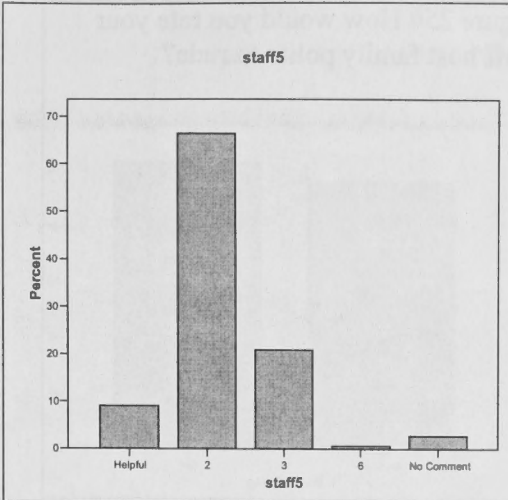


Figure 247 How would you rate your staff/host family helpful to un-helpful?

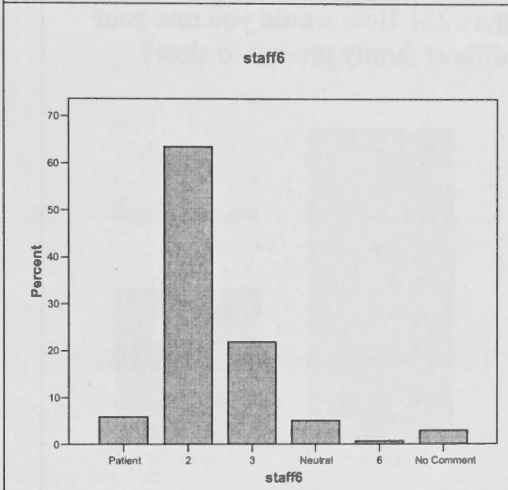


Figure 248 How would you rate your staff/host family patient to pushy?

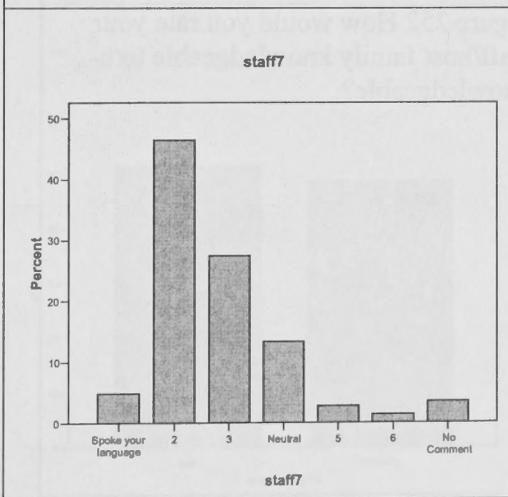


Figure 249 How would you rate your staff/host family spoke your language to inadequate language skills?



Figure 250 How would you rate your staff/host family polite to rude?

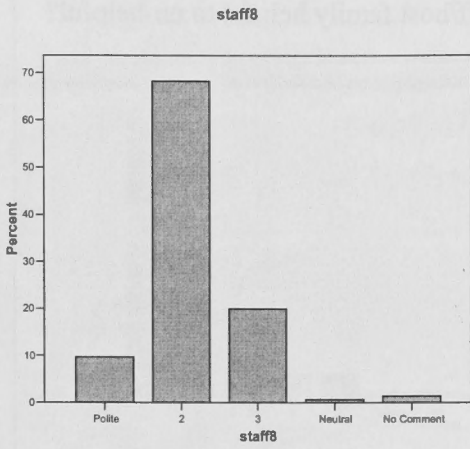


Figure 251 How would you rate your staff/host family prompt to slow?

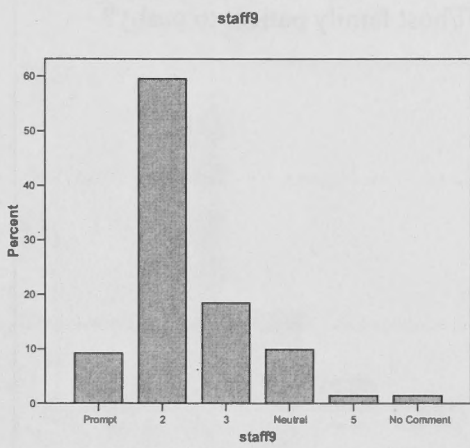
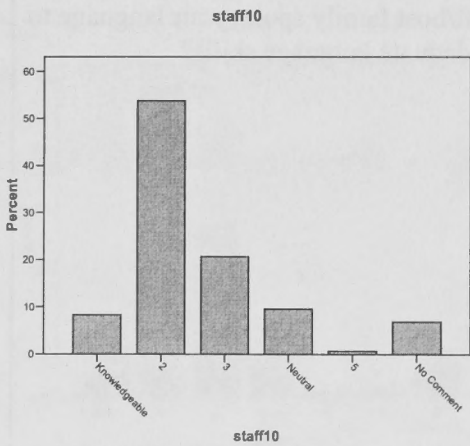


Figure 252 How would you rate your staff/host family knowledgeable to u-knowledgeable?



Education/Information Opportunities

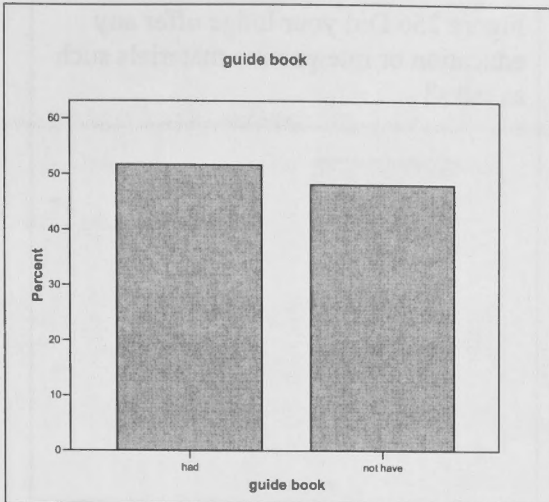


Figure 253 Did your lodge offer any education or interpretive materials such as guide books?

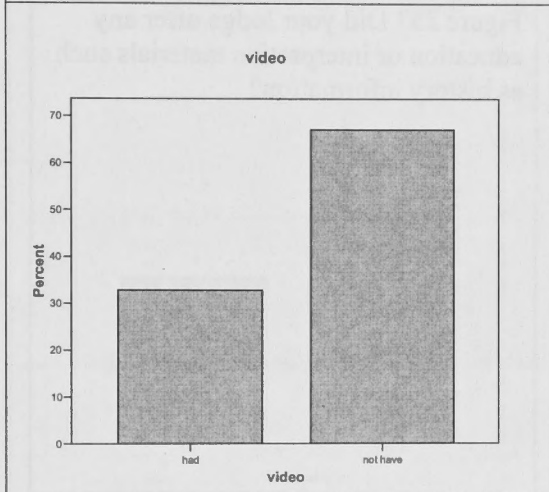


Figure 254 Did your lodge offer any education or interpretive materials such as video?

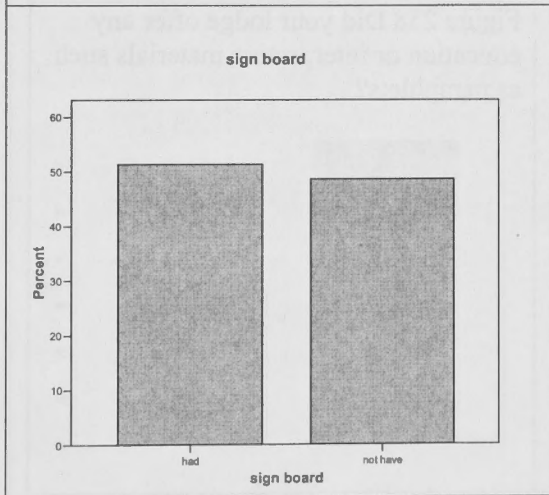


Figure 255 Did your lodge offer any education or interpretive materials such as sign boards?

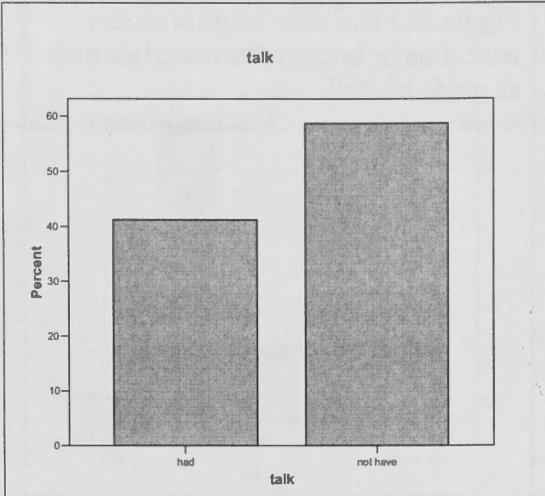


Figure 256 Did your lodge offer any education or interpretive materials such as talks?

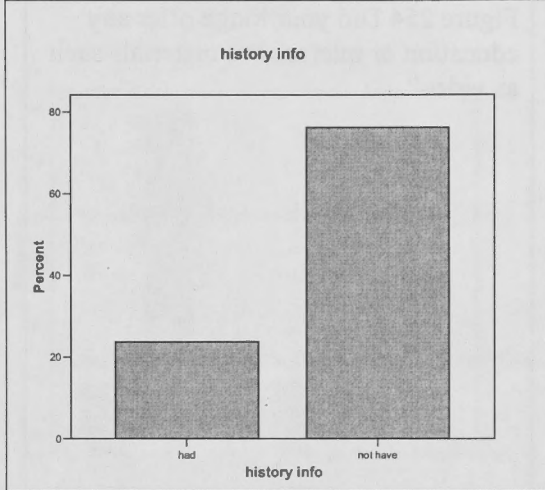


Figure 257 Did your lodge offer any education or interpretive materials such as history information?

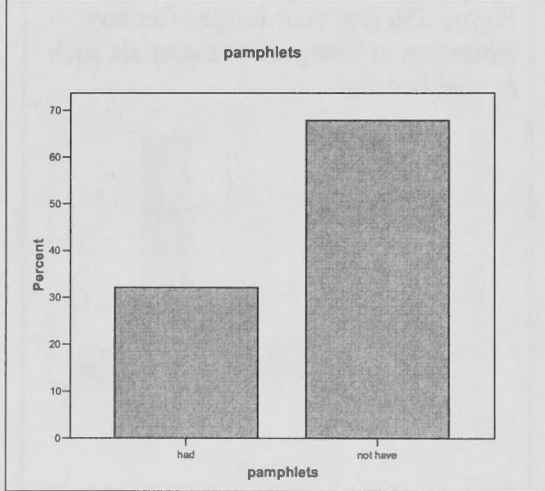


Figure 258 Did your lodge offer any education or interpretive materials such as pamphlets?

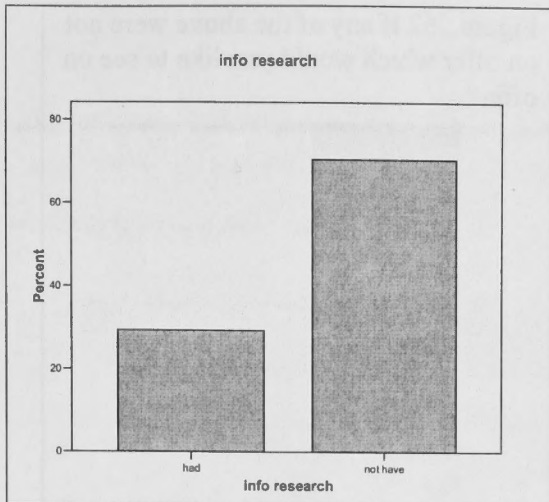


Figure 259 Did your lodge offer any education or interpretive materials such as information on research in the area?

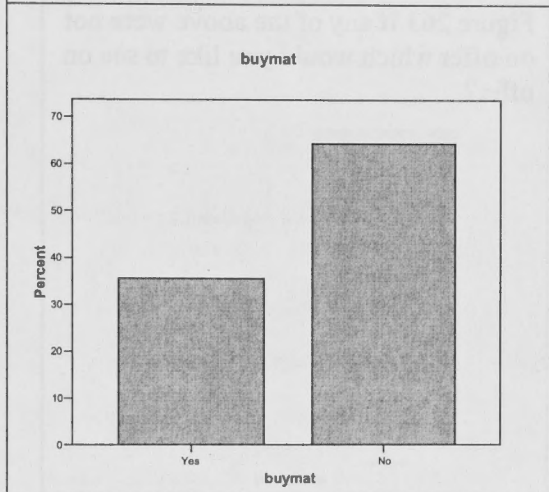


Figure 260 Were there opportunities to purchase any of the above?

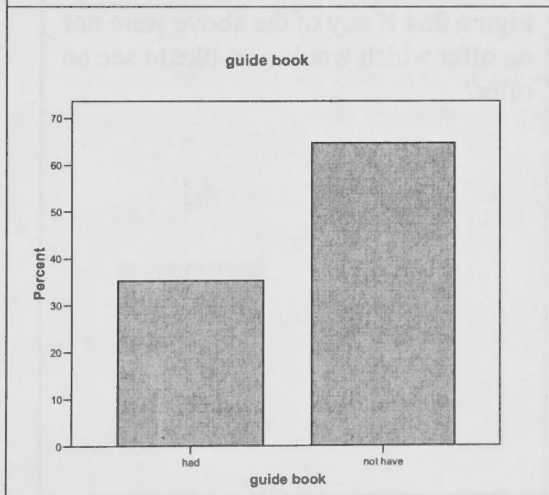


Figure 261 If any of the above were not on offer which would you like to see on offer?

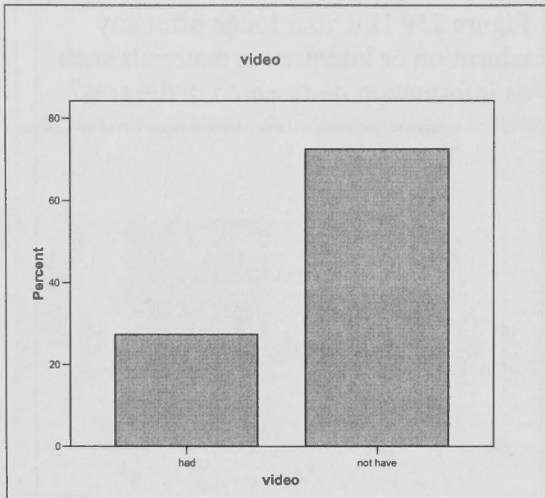


Figure 262 If any of the above were not on offer which would you like to see on offer?

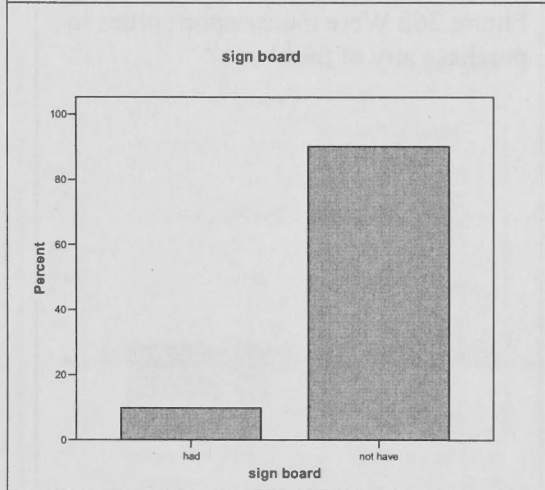


Figure 263 If any of the above were not on offer which would you like to see on offer?

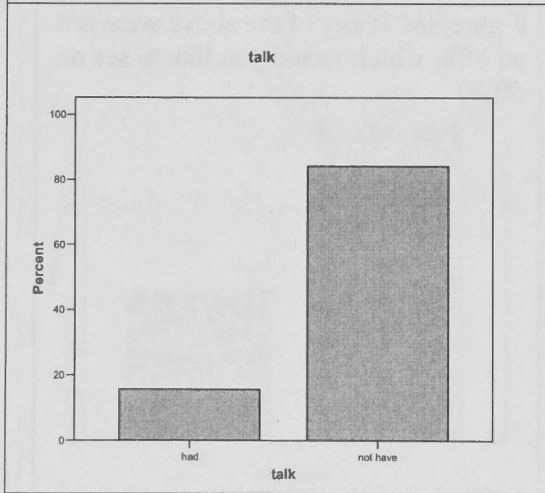


Figure 264 If any of the above were not on offer which would you like to see on offer?

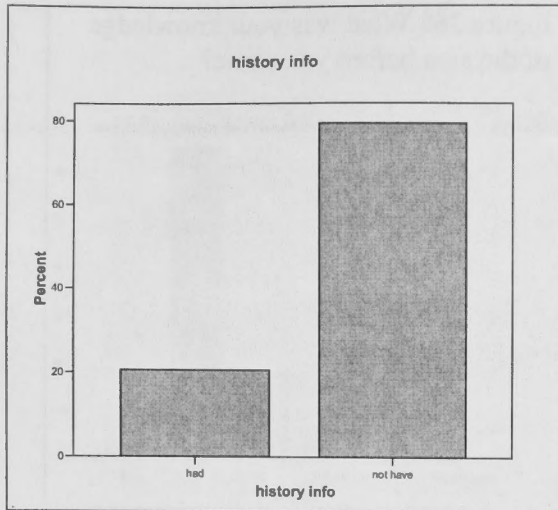


Figure 265 If any of the above were not on offer which would you like to see on offer?

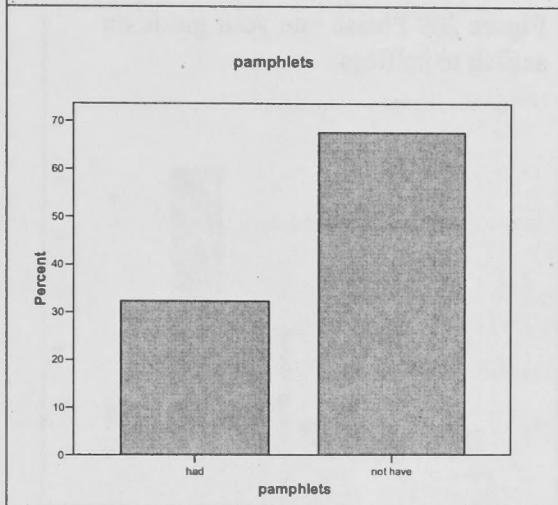


Figure 266 If any of the above were not on offer which would you like to see on offer?

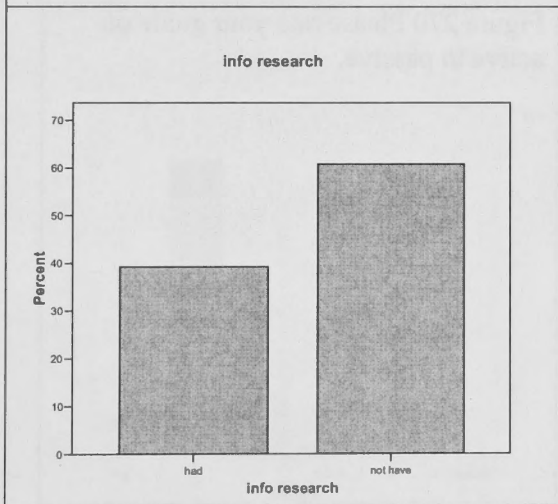


Figure 267 If any of the above were not on offer which would you like to see on offer?

Figure 268 What was your knowledge of the area before you came?

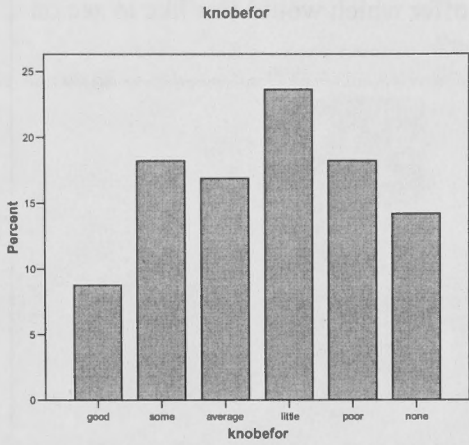


Figure 269 Please rate your guide on selfish to selfless.

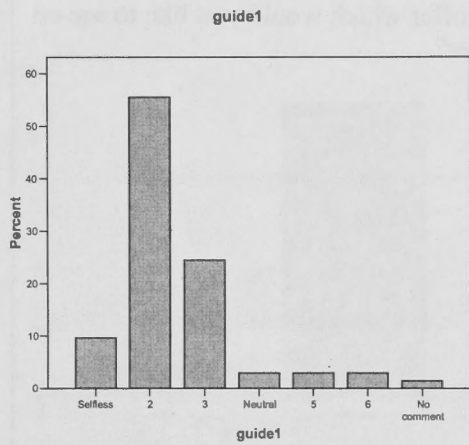
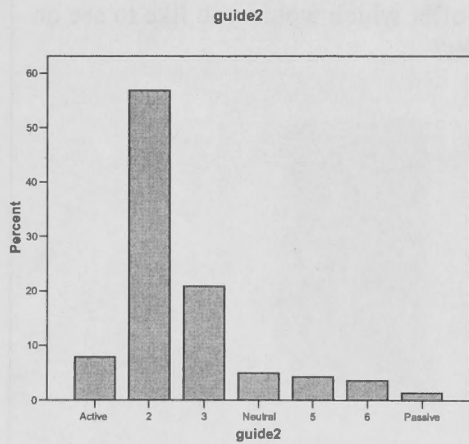


Figure 270 Please rate your guide on active to passive.



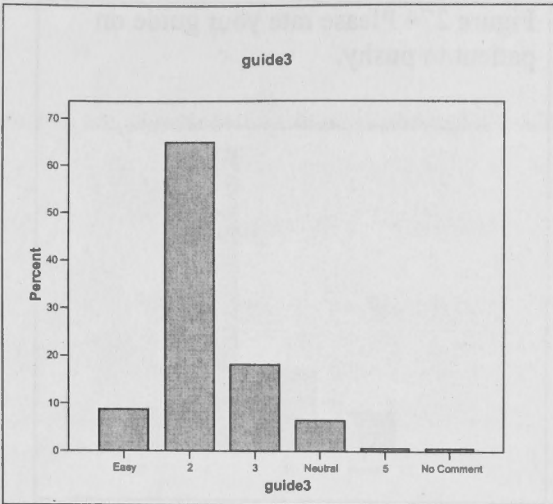


Figure 271 Please rate your guide on difficult to easy.

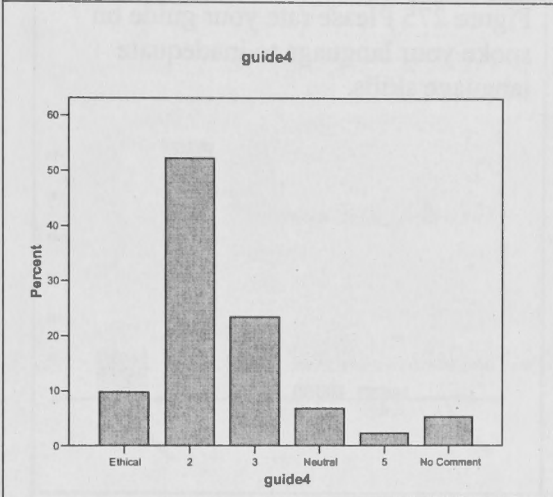


Figure 272 Please rate your guide on ethical to corrupt.

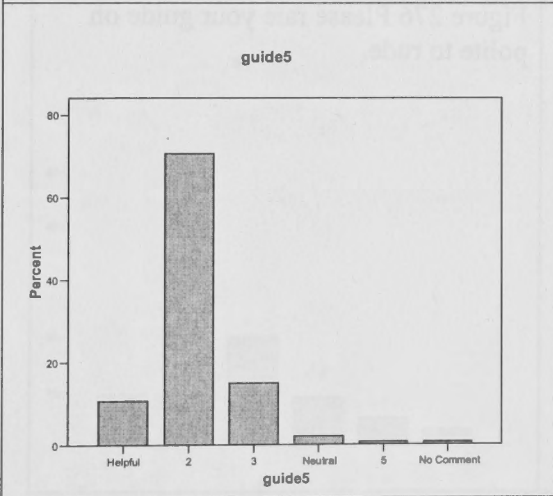


Figure 273 Please rate your guide on helpful to un-helpful.



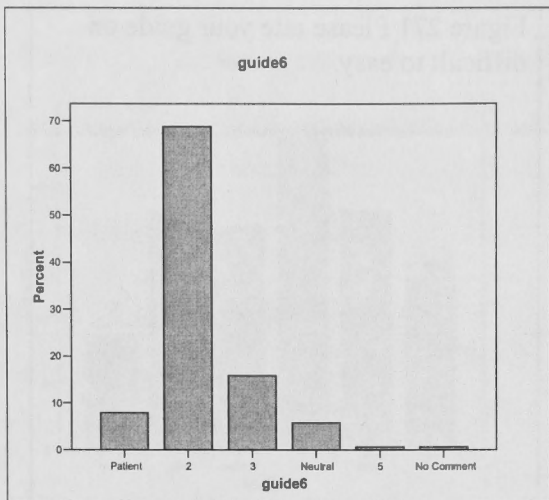


Figure 274 Please rate your guide on patient to pushy.

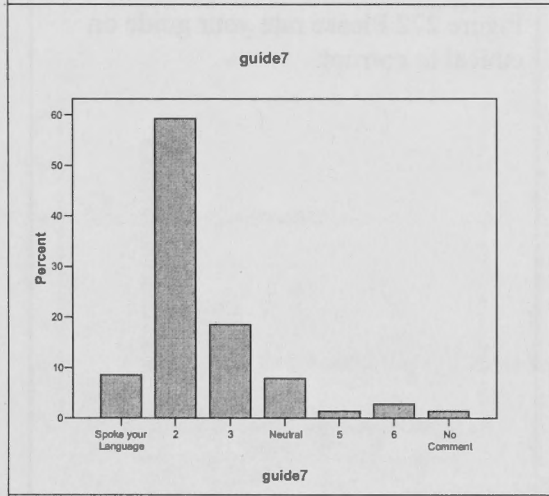


Figure 275 Please rate your guide on spoke your language to inadequate language skills.

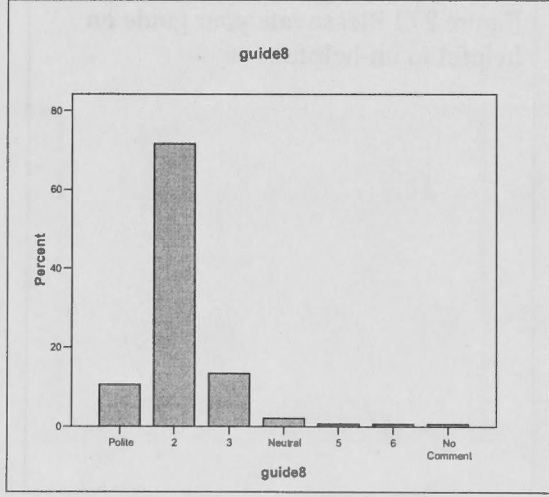


Figure 276 Please rate your guide on polite to rude.

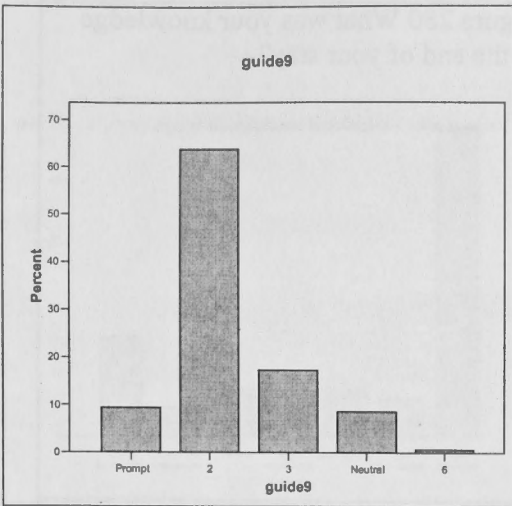


Figure 277 Please rate your guide on prompt to slow.

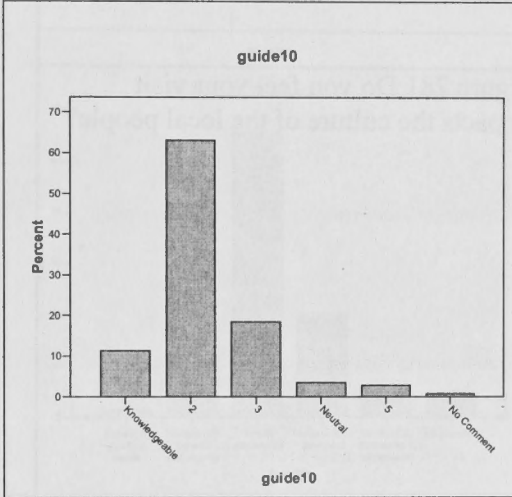


Figure 278 Please rate your guide on knowledgeable to un-knowledgeable.

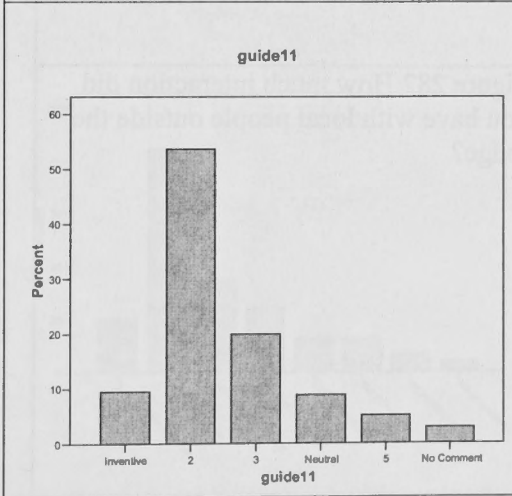


Figure 279 Please rate your guide on inventive to un-inventive.

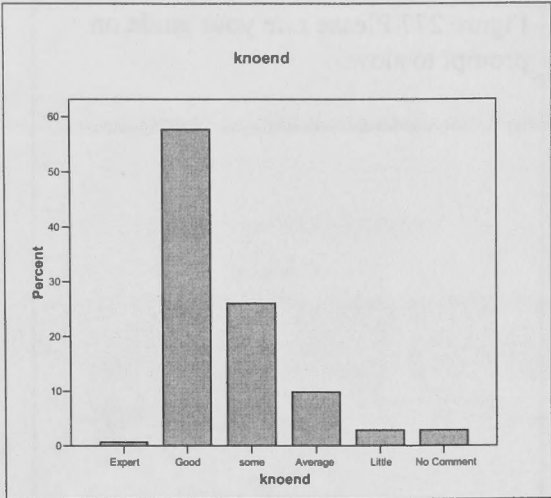


Figure 280 What was your knowledge at the end of your stay?

Culture

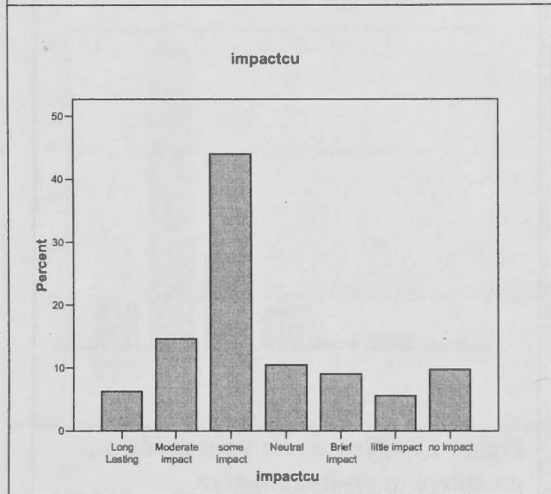


Figure 281 Do you feel your visit impacts the culture of the local people?

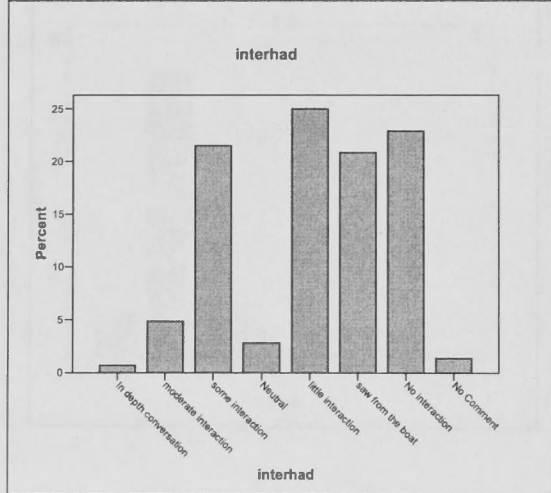


Figure 282 How much interaction did you have with local people outside the lodge?

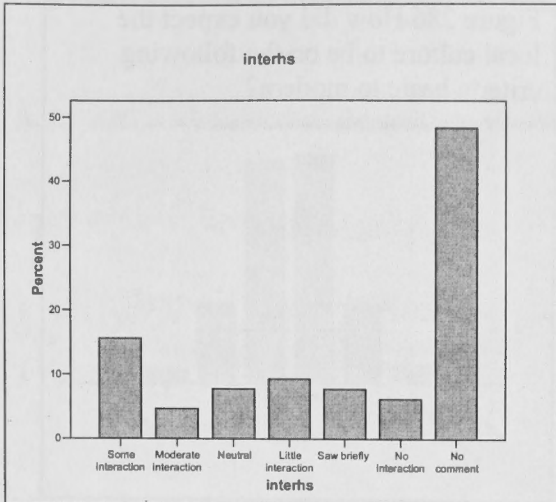


Figure 283 If home stay how much interaction did you have with your host family?

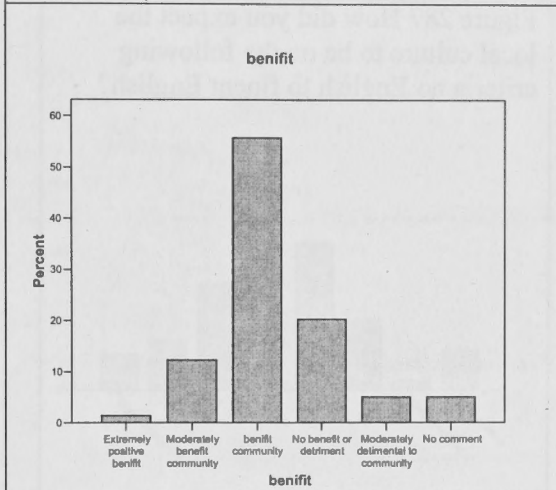


Figure 284 Do you feel your visit benefited the local community?

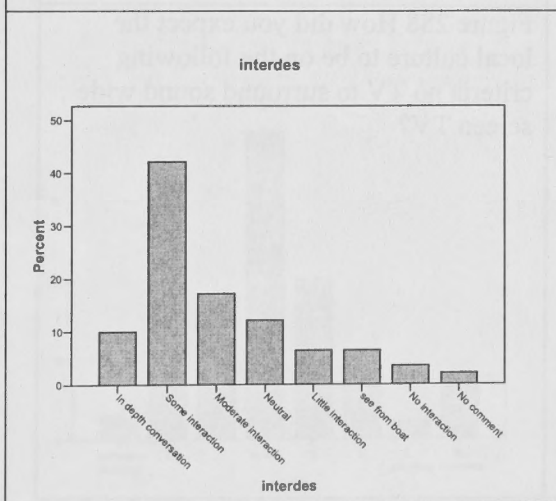


Figure 285 Amount of interaction with the local community desired?

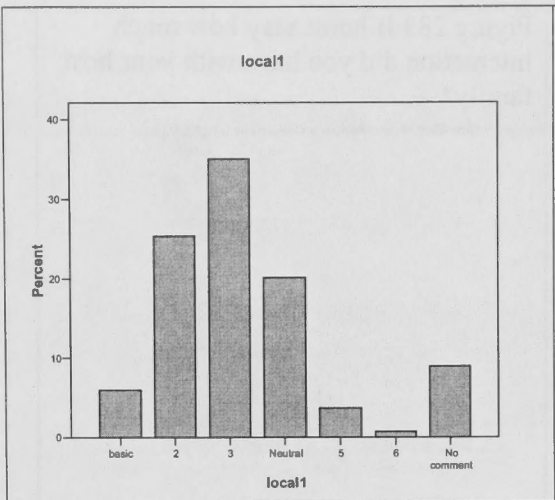


Figure 286 How did you expect the local culture to be on the following criteria basic to modern?

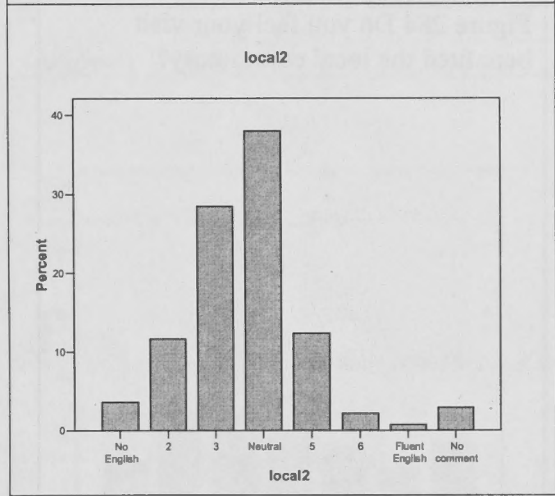


Figure 287 How did you expect the local culture to be on the following criteria no English to fluent English?

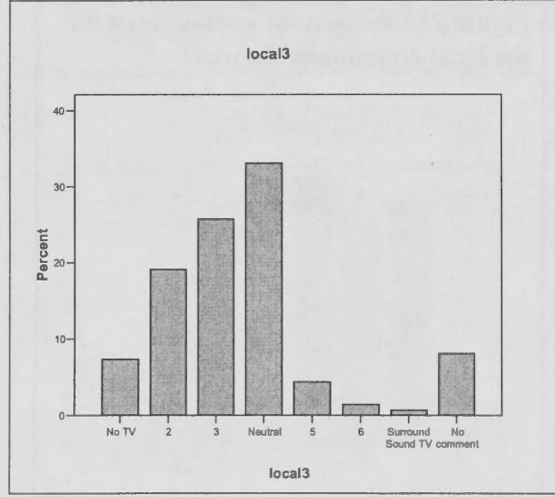


Figure 288 How did you expect the local culture to be on the following criteria no TV to surround sound wide screen TV?

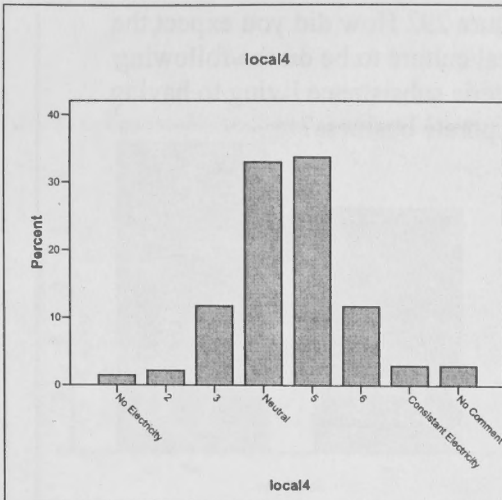


Figure 289 How did you expect the local culture to be on the following criteria no electricity to consistent electricity?

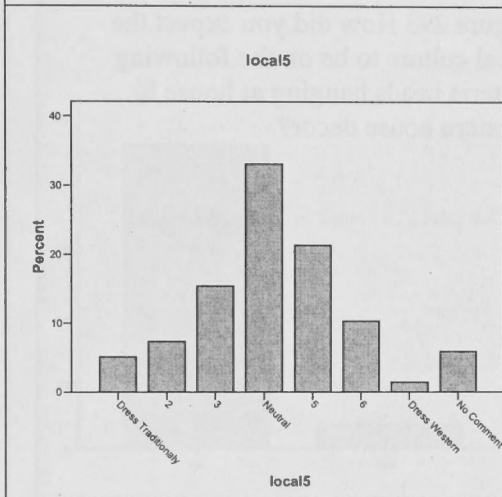


Figure 290 How did you expect the local culture to be on the following criteria dress traditional dress western?

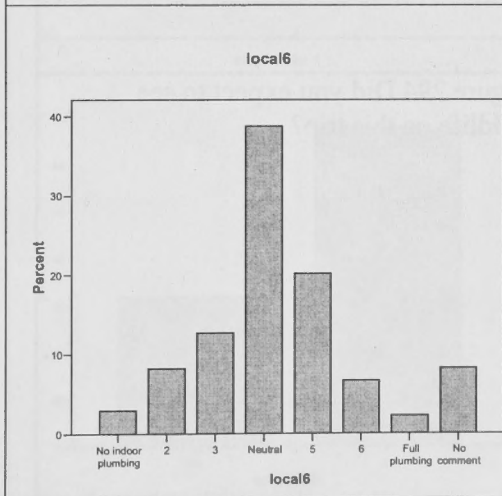


Figure 291 How did you expect the local culture to be on the following criteria no indoor plumbing to full plumbing?

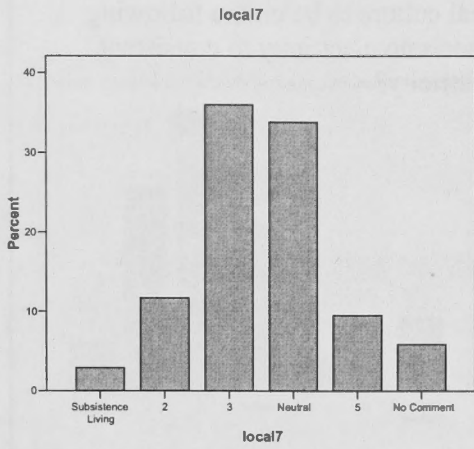


Figure 292 How did you expect the local culture to be on the following criteria subsistence living to having corporate business?

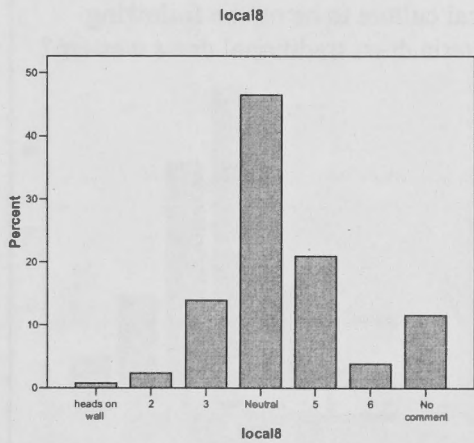


Figure 293 How did you expect the local culture to be on the following criteria heads hanging at house to western house decor?

**Wildlife**

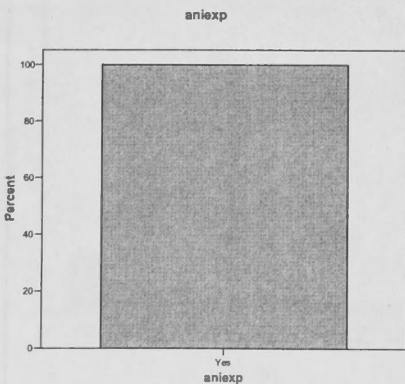


Figure 294 Did you expect to see wildlife on this trip?

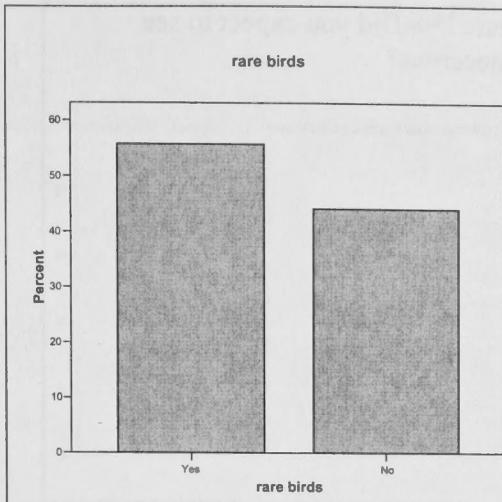


Figure 295 Did you expect to see rare birds?

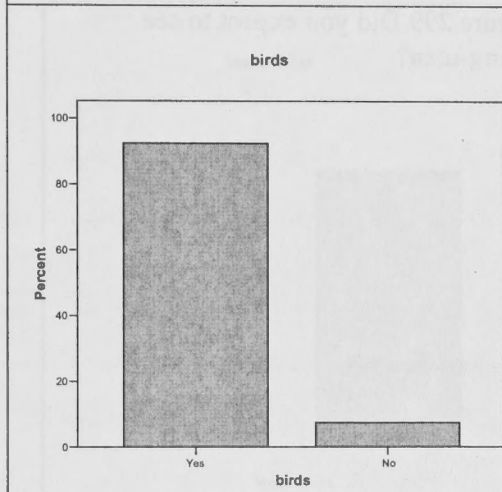


Figure 296 Did you expect to see birds?

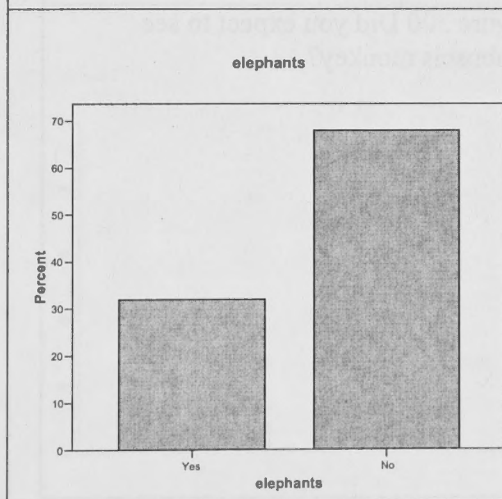


Figure 297 Did you expect to see elephants?



Figure 298 Did you expect to see rhinoceros?

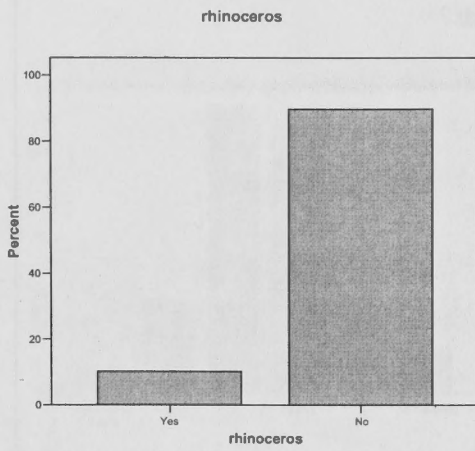


Figure 299 Did you expect to see orang-utan?

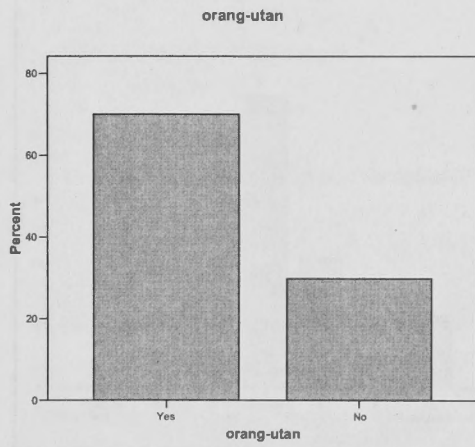
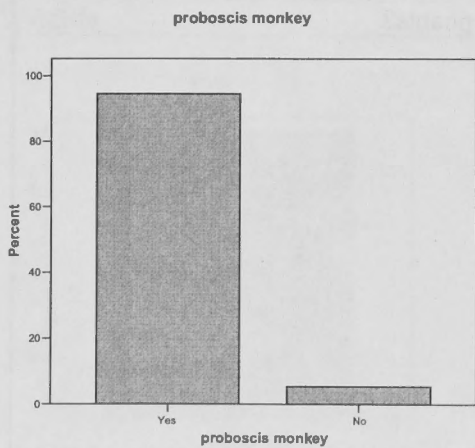


Figure 300 Did you expect to see proboscis monkey?



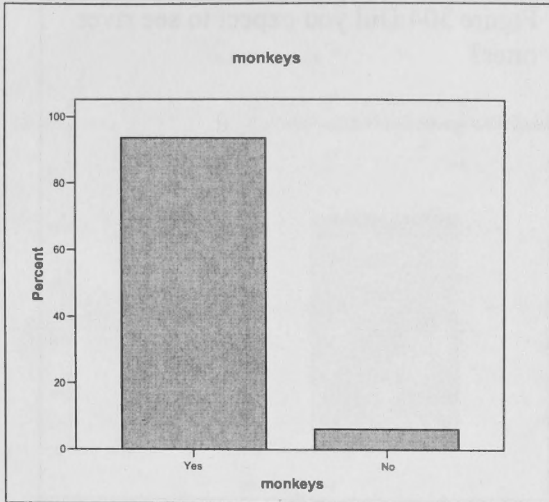


Figure 301 Did you expect to see monkeys?

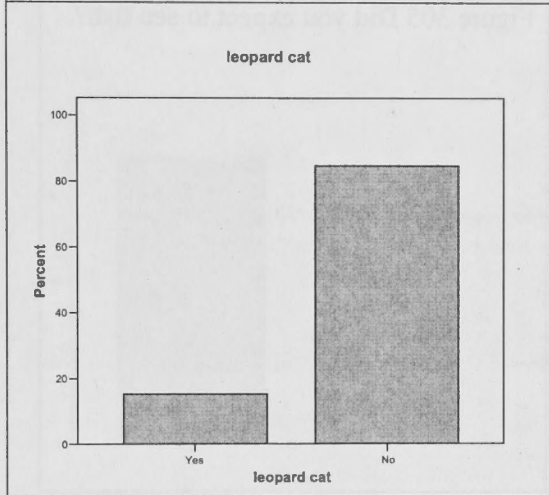


Figure 302 Did you expect to see leopard cat?

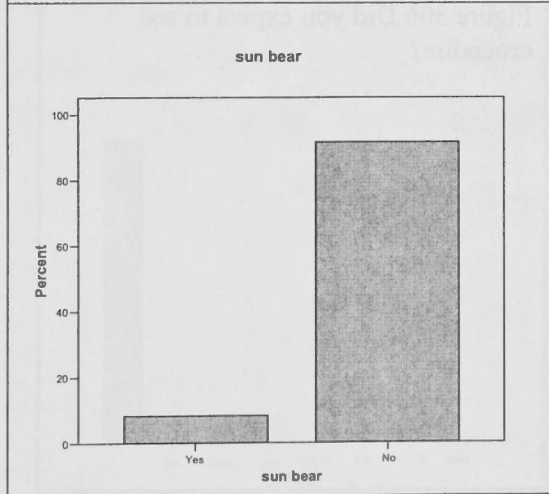


Figure 303 Did you expect to see sun bear?

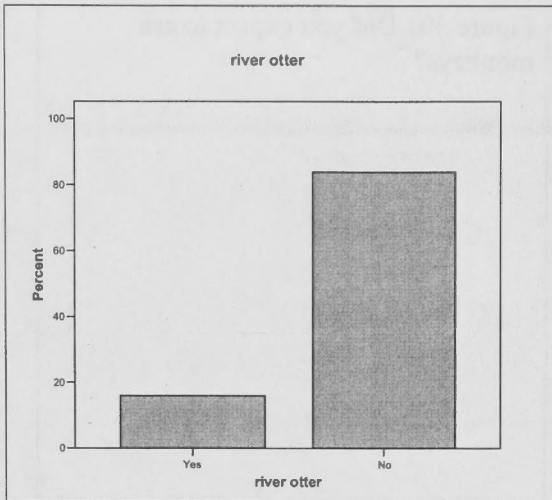


Figure 304 Did you expect to see river otter?

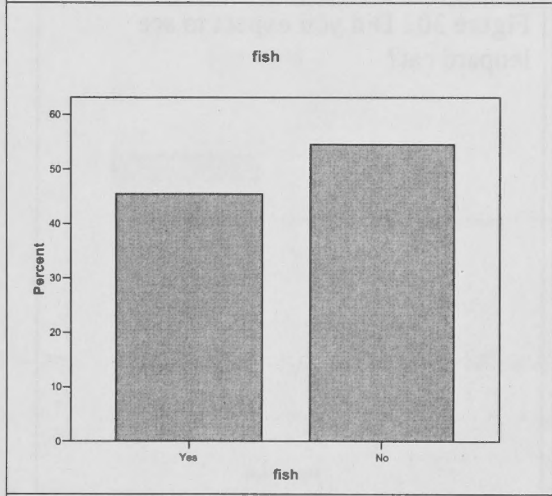


Figure 305 Did you expect to see fish?

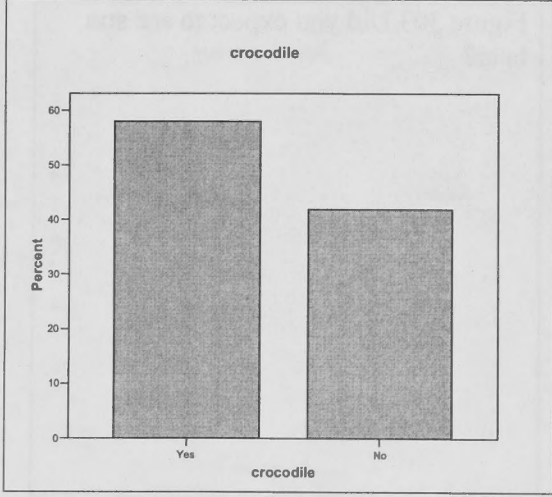


Figure 306 Did you expect to see crocodile?

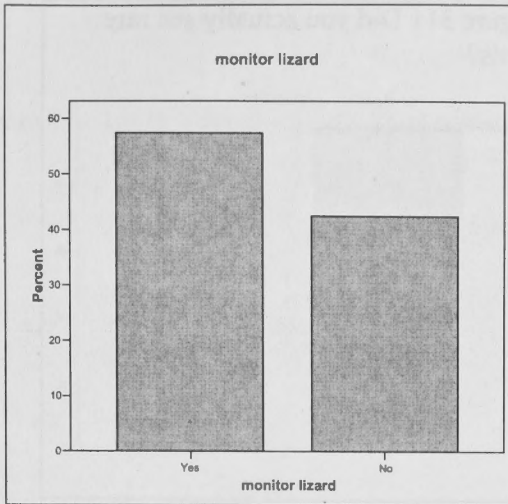


Figure 307 Did you expect to see monitor lizard?

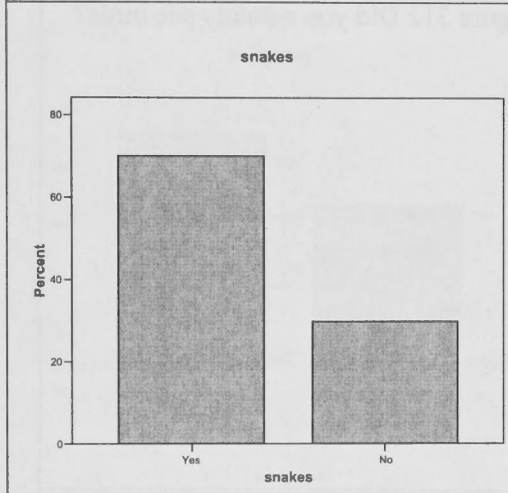


Figure 308 Did you expect to see snakes?

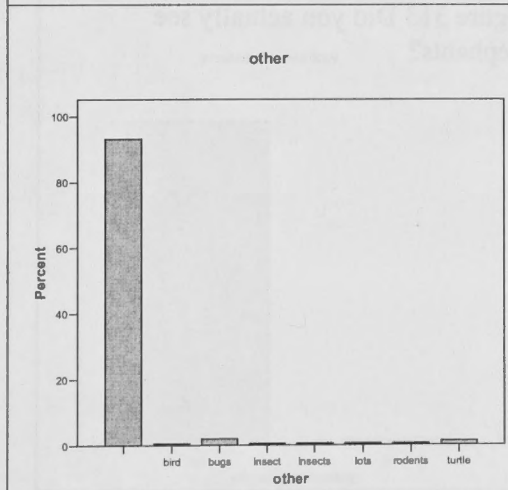


Figure 309 Did you expect to see other?

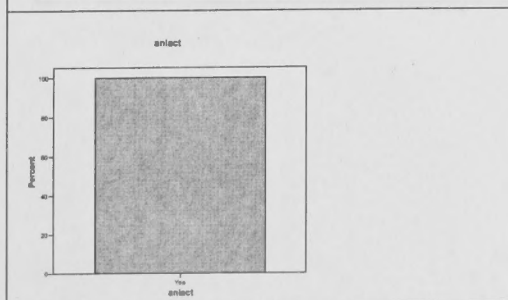


Figure 310 Did you actually view any wildlife on this trip?

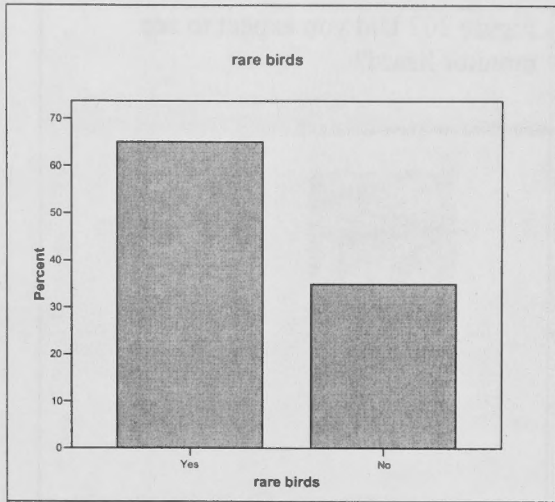


Figure 311 Did you actually see rare birds?

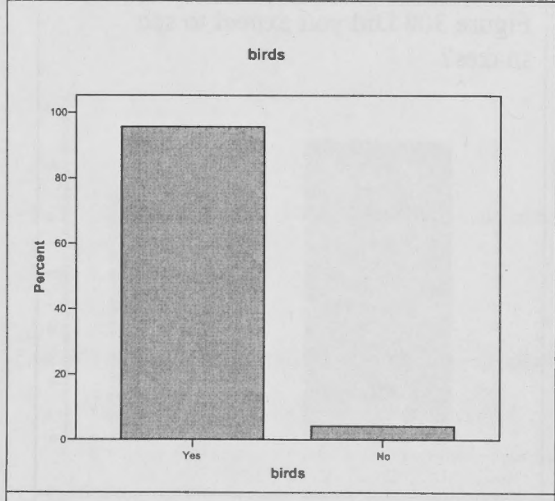


Figure 312 Did you actually see birds?

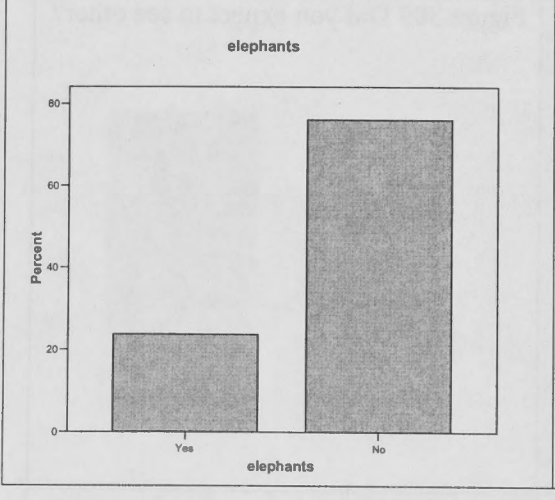


Figure 313 Did you actually see elephants?

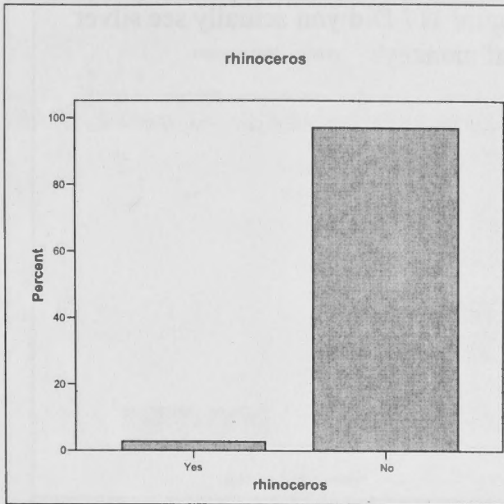


Figure 314 Did you actually see rhinoceros?

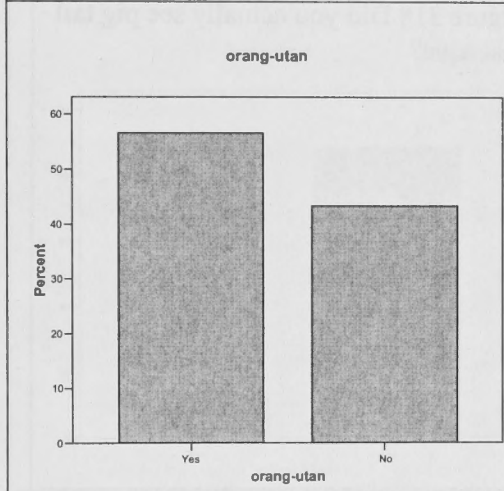


Figure 315 Did you actually see orang-utan?

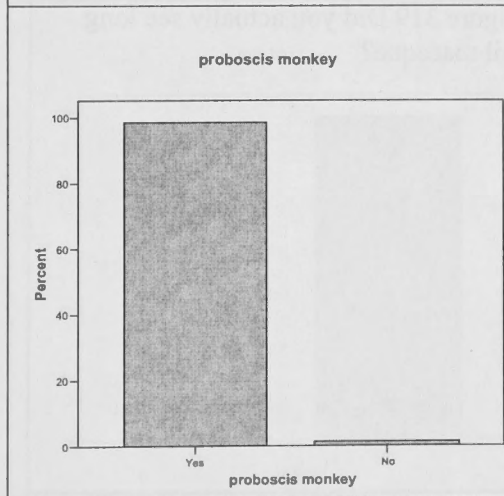


Figure 316 Did you actually see proboscis monkey?

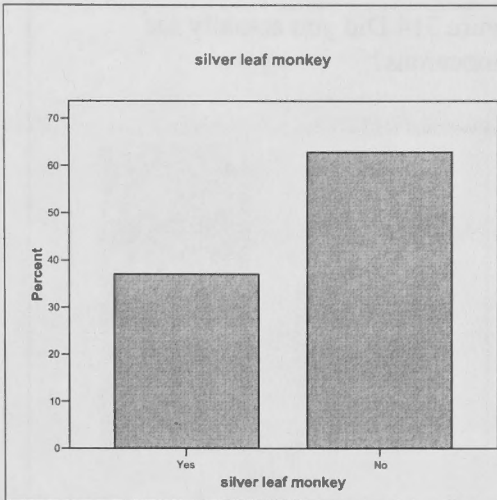


Figure 317 Did you actually see silver leaf monkey?

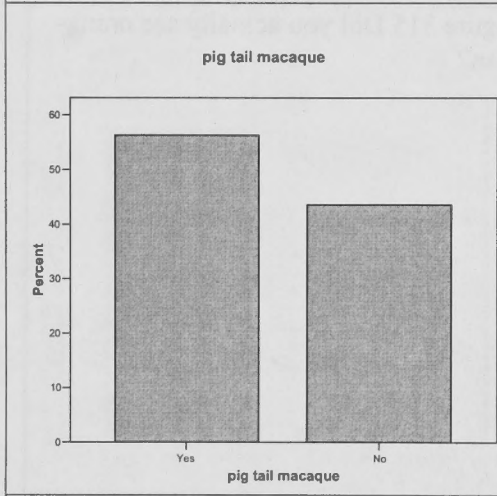


Figure 318 Did you actually see pig tail macaque?

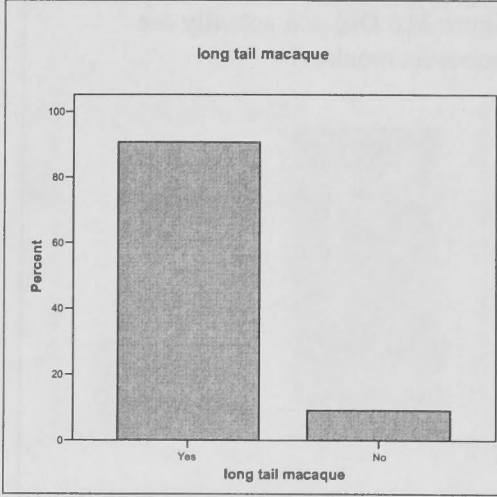


Figure 319 Did you actually see long tail macaque?

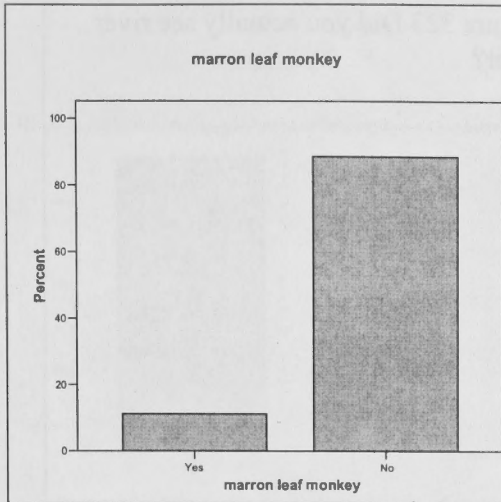


Figure 320 Did you actually see marron leaf monkey?

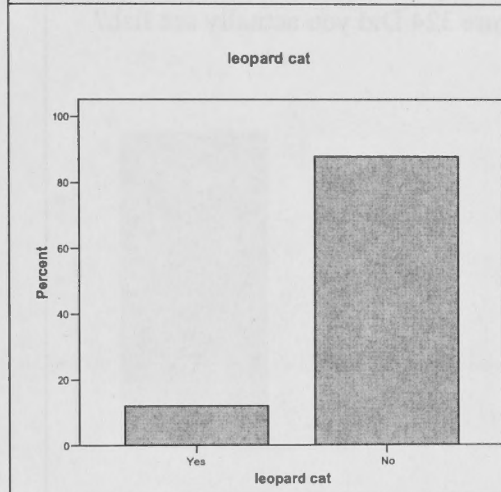


Figure 321 Did you actually see leopard cat?

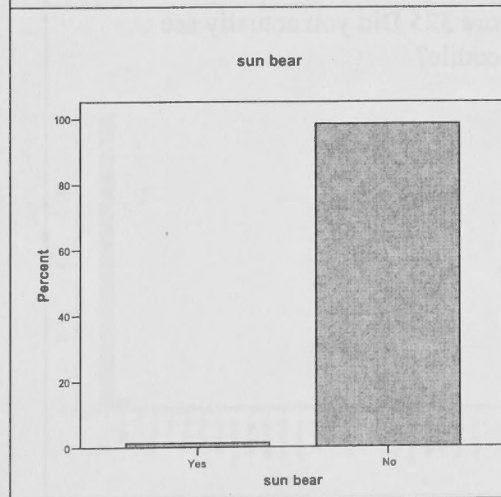


Figure 322 Did you actually see sun bear?



Figure 323 Did you actually see river otter?

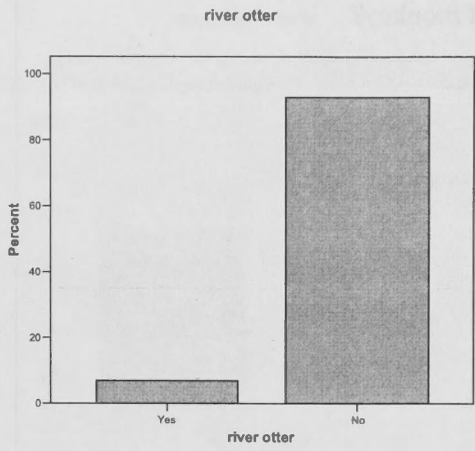


Figure 324 Did you actually see fish?

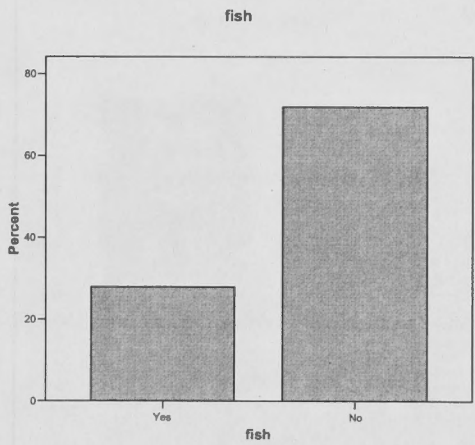
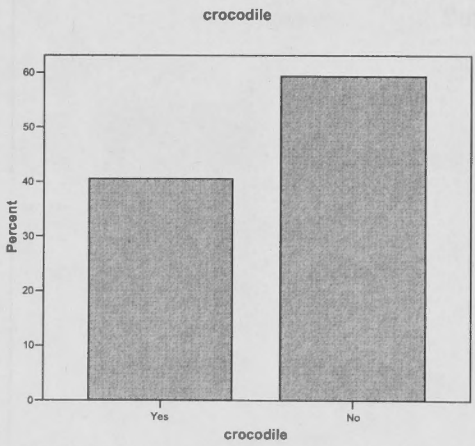


Figure 325 Did you actually see crocodile?





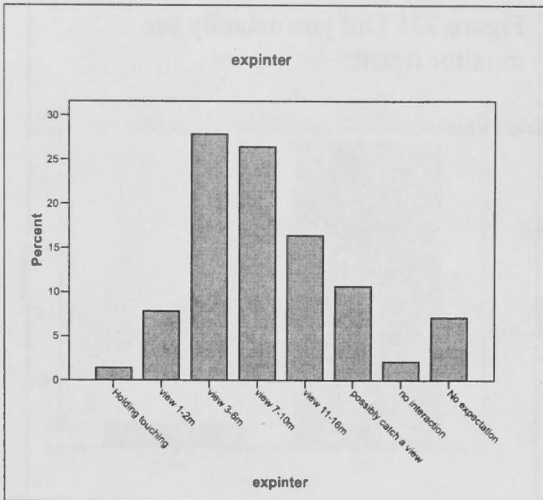


Figure 329 What was your expected interaction with wildlife?

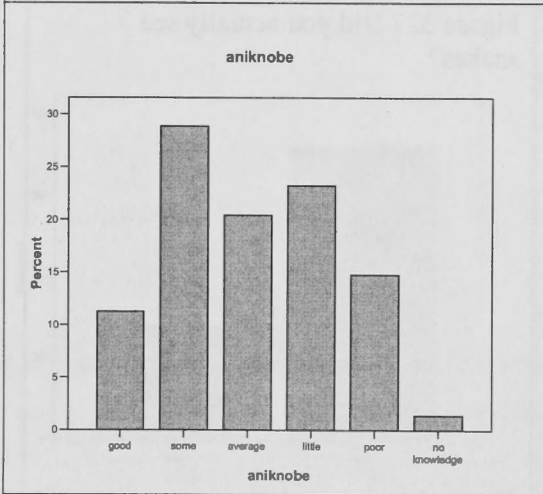


Figure 330 What was your knowledge level of the animals of the area before your visit?

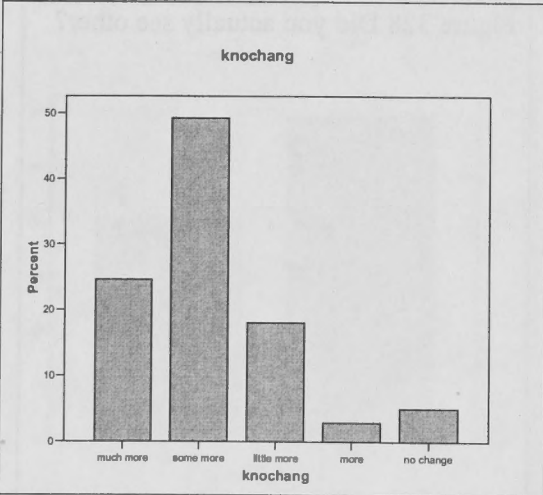


Figure 331 Did this knowledge change after your visit here?

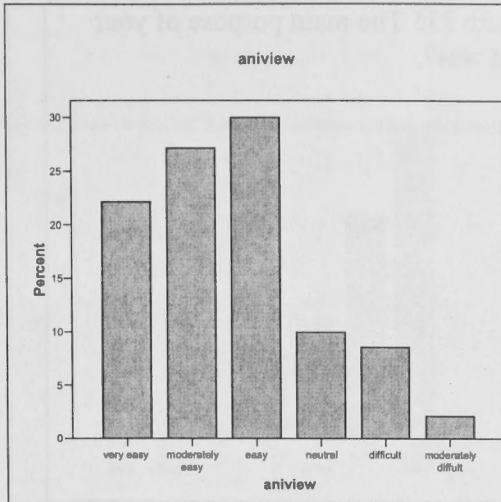


Figure 332 How easy did you find wildlife viewing?

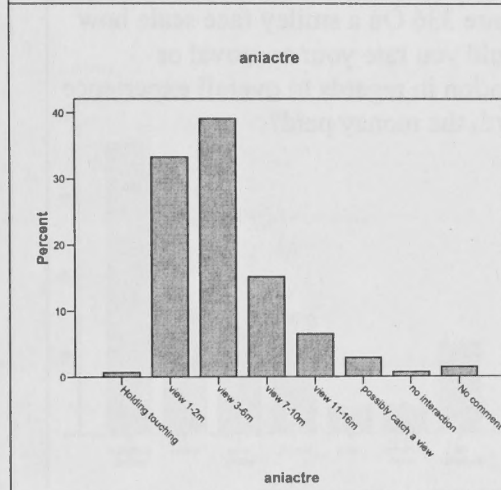


Figure 333 What was your actual interaction with wildlife?

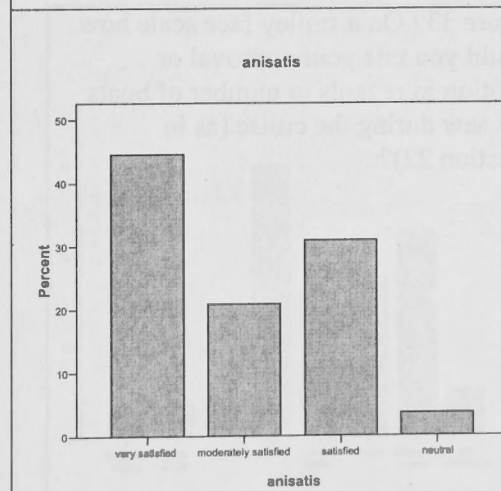


Figure 334 What was your overall satisfaction with the wildlife portion of the trip?

Overall

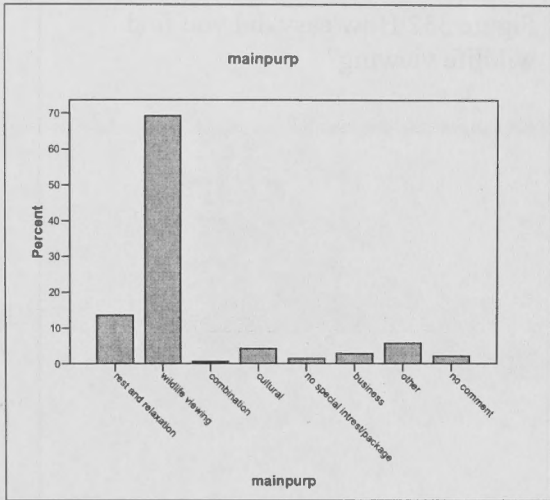


Figure 335 The main purpose of your visit was?

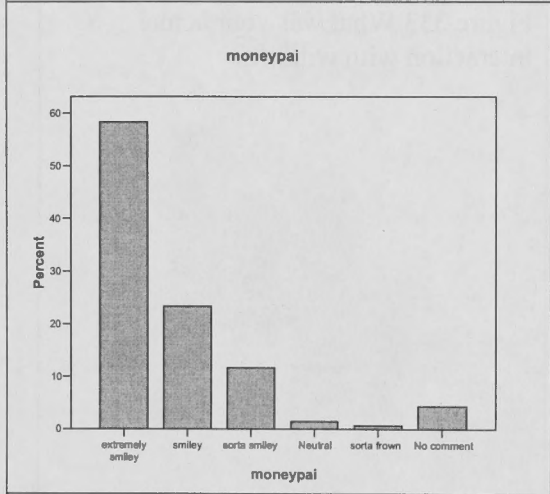


Figure 336 On a smiley face scale how would you rate your approval or emotion in regards to overall experience worth the money paid?

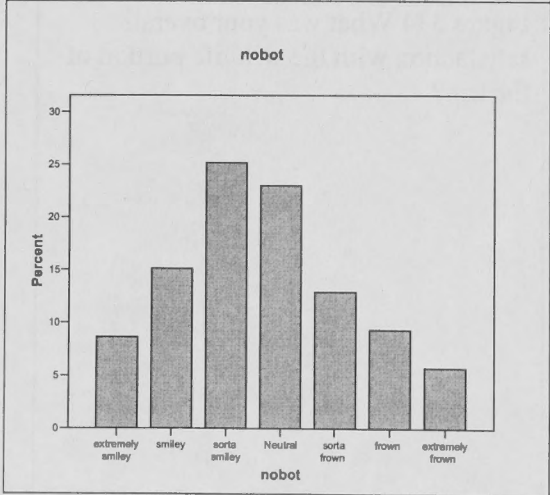


Figure 337 On a smiley face scale how would you rate your approval or emotion in regards to number of boats you saw during the cruise (as in question 22)?

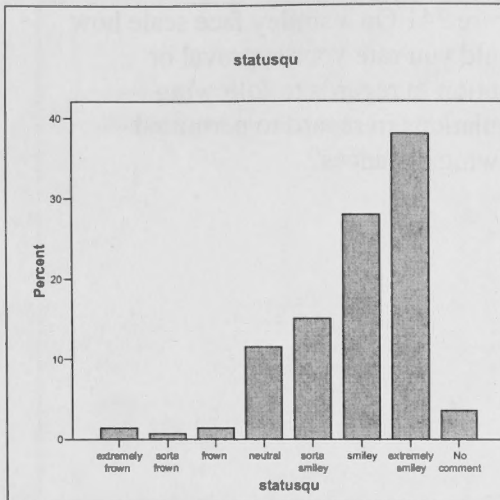


Figure 338 On a smiley face scale how would you rate your approval or emotion in regards to Maintaining the status quo in regard to number of passengers in your boat (number based on question 21)?

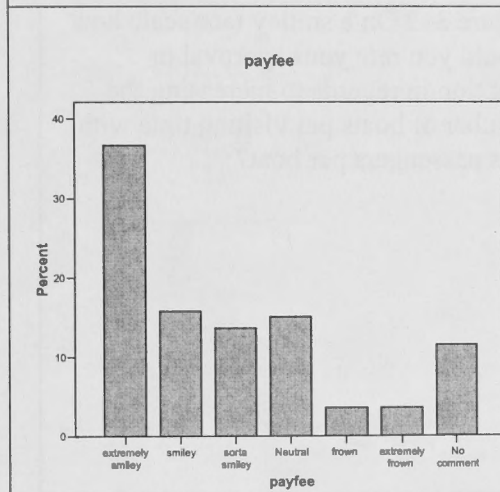


Figure 339 On a smiley face scale how would you rate your approval or emotion in regards to Paying a conservation fee for entering rivers?

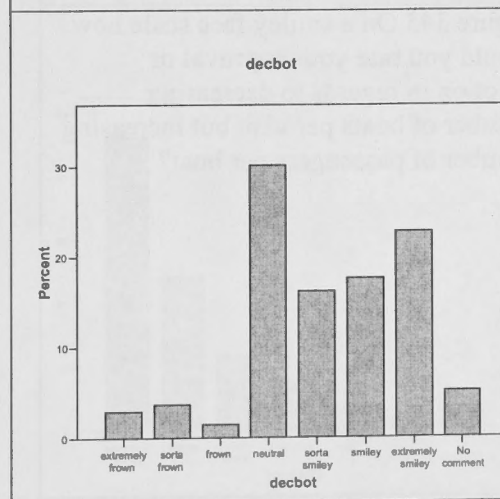


Figure 340 On a smiley face scale how would you rate your approval or emotion in regards to decreasing the number of boats permitted per viewing time?

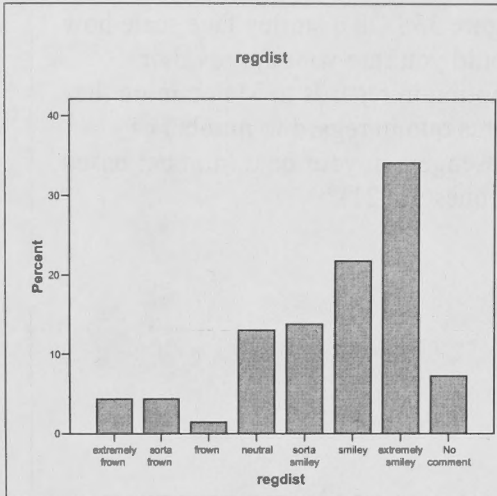


Figure 341 On a smiley face scale how would you rate your approval or emotion in regards to following regulations in regard to permitted viewing distances?

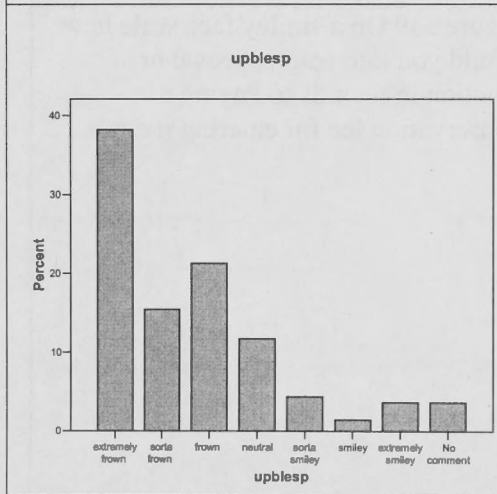


Figure 342 On a smiley face scale how would you rate your approval or emotion in regards to increasing the number of boats per visiting time with less passengers per boat?

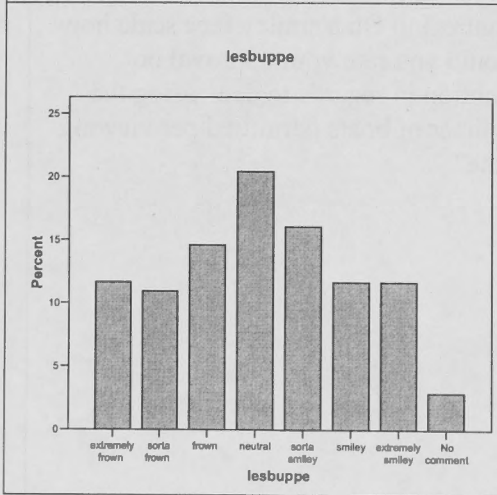


Figure 343 On a smiley face scale how would you rate your approval or emotion in regards to decreasing number of boats per visit but increasing number of passengers per boat?

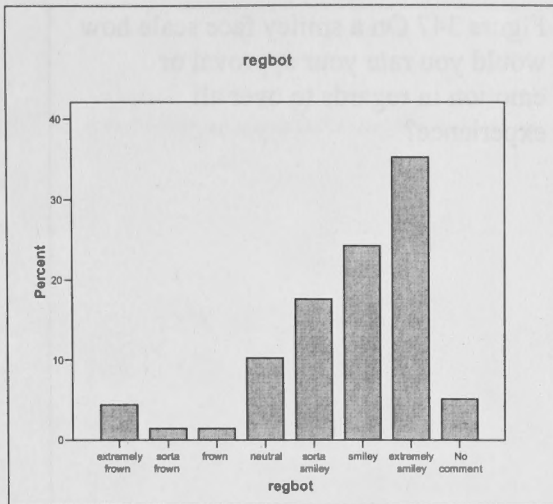


Figure 344 On a smiley face scale how would you rate your approval or emotion in regards to following regulations in regards to number of boats permitted per visiting time?

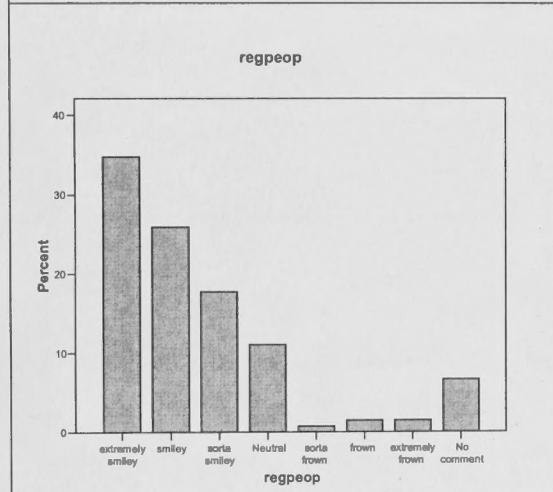


Figure 345 On a smiley face scale how would you rate your approval or emotion in regards to following regulations in regard to number of passengers per boat?

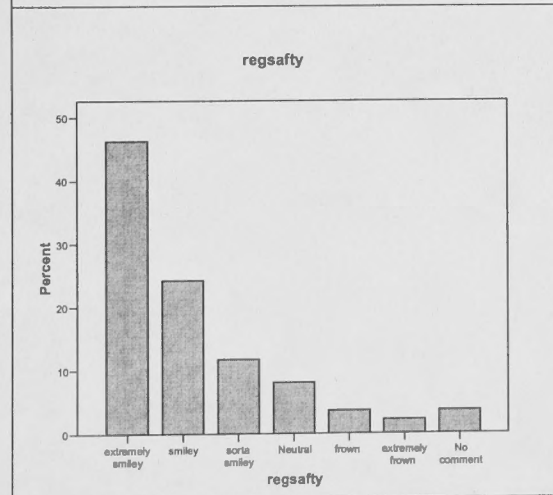


Figure 346 On a smiley face scale how would you rate your approval or emotion in regards to following regulations in regard to boat safety?



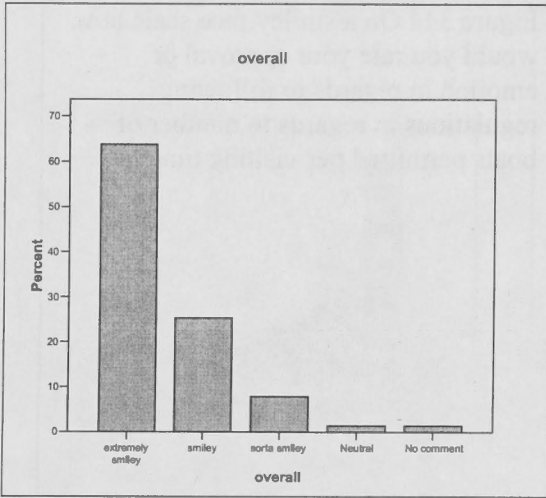


Figure 347 On a smiley face scale how would you rate your approval or emotion in regards to over all experience?